THE AUK:

A QUARTERLY JOURNAL OF

ORNITHOLOGY.

VOL. X. OCTOBER, 1893. NO. 4.

ON THE CHANGES OF PLUMAGE IN THE BOBOLINK (*DOLICHONYX ORYZIVORUS*).

BY FRANK M. CHAPMAN.

In a previous number of 'The Auk,'[1] I described, under the above title, the changes which occur in the plumage of the Bobolink, with particular reference to the manner in which the breeding plumage of the male is acquired. This latter point was one on which considerable difference of opinion existed, but the question seemed to be settled by a specimen in the American Museum of Natural History (No. 32,783, H. H. Smith, Corumbà, Matto Grosso, Brazil, March 1, 1886) which showed clearly the character of the spring change of plumage.

This specimen is apparently unique and exhibits in a remarkable degree the extent of a change in color which, in a comparatively short time, occurs solely through fading and a wearing away of the exposed tips of many of the feathers.

When compared with a specimen in which, through these causes, the 'full' or black plumage has been acquired the differences are so great that it is difficult to believe they can have occurred without an actual moult. For this reason the Editors of 'The Auk' have decided to figure the Corumbà specimen and

[1] Vol. VII, 1890, pp. 120–124.

with it a bird taken later in the season (Am. Mus. No. 36,182, Rutland, Vt., Jenness Richardson, June 4, 1889) in order that the two may be readily compared. At their request I repeat here as briefly as possible the substance of my former paper.

In the course of one year the male Bobolink passes through the following phases of plumage: Late in July or early in August when the breeding season is over, the black male, similar to the figure in the background of the accompanying plate, undergoes a complete moult and appears in the yellowish, Sparrow-like plumage of the Reed-bird, which closely resembles the plumage of the breeding female. In this costume the birds migrate southward, pausing *en route* to visit the rice-fields of the South, and apparently continuing their journey to the campo districts of southwestern Brazil.

The Corumbà specimen shows that the spring change of plumage occurs by March 1. As before stated considerable difference of opinion existed as to the nature of this change, but it was generally believed that the yellowish Reed-bird became the black Bobolink not by moulting but by a change in the color of the feathers. That is, the black area which is present at the base of some contour feathers was supposed to gradually increase in size, while at the same time the tips of the feathers became worn away. As for the buffy nuchal patch and whitish scapulars and rump, I do not know that the manner of their acquisition had ever been explained until the Corumbà specimen was described.

This specimen shows that in the spring as well as after the breeding season a complete moult takes place. As a result of this moult the bird gains a plumage very similar to that shown by the figure in the foreground of the plate.

The Smith specimen is not quite so far advanced as this figure shows; the centre of the belly, the first primary and several of the secondaries in both wings belong to the old, or Reed-bird plumage, while the tail is but one third grown. In drawing this bird Mr. Thompson completed the moult of the wings and tail but did not equally alter the centre of the belly, which should be of the same color as the breast.

The change which follows is one that occurs in many birds, but in none with which I am familiar is it so marked as in the Bobolink. There is a series of birds in the American Museum which

connects the two birds figured by a finely graduated series of intermediates. These show how, as the birds travel northward, the yellow tips of the feathers slowly drop off, and that where they receive the most protection, as for example on the lower belly and crissum, they persist the longest. At the same time the nape, scapulars and rump are fading and the bill and feet are changing respectively from flesh color to blue-black and brownish black.

In a large series of spring males I have seen none taken before June which did not show remains of the yellow fringe; indeed it is exceptional to find specimens which do not show at least a trace of it.

Birds taken during summer represent the extreme of faded and abraded plumage, and Mr. Ridgway writes me, that in his opinion the western race, *D. o. albinucha*, is based on examples in this condition. He futher says, that at the time *albinucha* was described, seasonal counterparts of the specimens on which the race was based did not exist in the National Museum series of Eastern birds. Thus, the specimen now figured from Rutland, although taken as early as June 4, has the nape slightly paler than a male from Pembina, N. D., taken June 14. Again, a male (Am. Mus. No. 57,792) taken at Bluff City, Utah, May 19, has the nape fully as dark as Eastern specimens taken at the same time.

I believe, therefore, with Mr. Ridgway, that the bird known as *Dolichonyx oryzivorus albinucha* should be considered a synonym of *D. oryzivorus*.

THE FOOD OF HUMMINGBIRDS.

BY FREDERIC A. LUCAS.

IN 'Science' for October 28, 1892, was an article by Dr. Morris Gibbs of Kalamazoo, Mich., entitled 'The Hummingbird's Food,' in which the author stated as the result of his observations, and

the dissection of many specimens of *Trochilus colubris*, both young and old, that he had never found anything to convince him that they lived on insects.

Dr. Gibbs' paper was followed by notes from Mr. Lawrence Bruner, saying that he had observed the Rubythroat taking sap from *Quercus ruber*, and Mr. Frank Bolles, stating that he had seen the same species regularly attending at holes drilled by the Sapsucker (*Sphyrapicus varius*) in red maple, red oak, poplar, white and gray birch, and white ash. Later on Mr. W. N. Clute wrote that in southern New York the favorite flower of the Rubythroat is the swamp thistle (*Cirsium muticum*), and as the honey bee gets pollen, but no honey, from this flower, it would appear that birds visit these flowers for the sake of the insects they contain. Many of these insects were said to be so minute as to escape ordinary observation; and were these taken and larger species left, the impression might be produced that no insects had been eaten. Lastly Mr. Alvah A. Eaton wrote that in California Anna's Hummingbird fed on the sap of the willow (*Salix lariolepis*), drinking at holes made by *Sphyrapicus ruber*, and from wounds made by the grub of a large borer. I have also been told that the Rubythroat has been seen in fall hovering about fallen pears from which the juice had exuded sufficiently to attract numerous 'yellow-jackets.'

In view of the published accounts of Gould, Gosse and others, substantiated by incidental observations of my own, this amount of testimony to the vegetable nature of the Hummingbird's food was a little surprising, and, in the hope of throwing a little light on the subject, the birds themselves were appealed to and the stomach contents of a number examined.

Altogether twenty-nine specimens, representing thirteen species, from sixteen widely separated localities, were examined, and all of these, save four which were quite empty, contained insect remains, usually in large quantities. Young Hummingbirds examined by Dr. Shufeldt and myself contained flies, spiders, and beetles, and any one who examines a nestling will notice that the skin of the neck is distended by the expansion of the œsophagus where this is, or has been, packed with food, so it is pretty safe to say that it is more than doubtful that honey enters into the little ones' bill of fare.

Mr. William Palmer tells me that he has seen the Rubythroat picking small spiders from their webs, and Professor Beal says that he has seen a Hummingbird stealing flies from a spider's web.

It would seem to be safe to assume that the main food of Hummingbirds is small insects, mainly diptera and hymenoptera. Homoptera are usually present, and small spiders form an important article of food, while hemiptera and coleoptera are now and then found. The small size of the insects may be inferred from the fact that one stomach contained remains of not less than fifty individuals, probably more.

Most of the insects found occur in or about flowers, and my own views agree with those of Mr. Clute, that it is usually insects, and not honey, that attract Hummingbirds to flowers, while in support of this is Mr. Palmer's testimony, he having examined blossoms of the trumpet vine and found that those visited by Hummingbirds contained few or no small insects, while the unvisited flowers contained many.

In view, however, of the testimony cited at the beginning of this paper, it would seem unquestionable that Hummingbirds do to some extent feed on the nectar of flowers and the sap of trees. That the Rubythroat in particular is addicted to this food is apparently indicated by the facts that three out of the four totally empty stomachs found were from this species, as well as a large proportion of the partly full stomachs. On the other hand, the three empty stomachs were from one locality, Matamoras, and some local or incidental cause may account for their condition. It is also to be noted that the only correspondent of 'Science' who seems actually to have dissected a Hummingbird is Dr. Gibbs, and the birds seen by other observers may have been in search of the small insects that would be attracted by the sweet sap. And, without wishing to reflect at all on Dr. Gibbs, I should like to have examined some of his specimens myself.

The fact that Hummingbirds in captivity greedily eat syrup is not so convincing as it might be, for captive animals exhibit some curious traits and refuse food to which they are accustomed in a wild state.

I am much inclined to believe with Dr. Shufeldt that Hummingbirds first visited flowers for insects and that the taste for sweets has been incidentally acquired.

Below is a list of the material examined, and I may say in addition that in preparing skeletons of Hummingbirds I have examined a number of specimens, not noted, all of which contained remains of insects. The greater part of these specimens were in the collection of the U. S. National Museum, but most of the examples of *Trochilus colubris* were among the material collected for the Division of Ornithology and Mammalogy, Dept. of Agriculture, and I am indebted to Dr. C. Hart Merriam for the privilege of examining these. I am also indebted to Mr. W. H. Ashmead for kindly determining such of the insects as have been identified.

Lampornis dominicus.—Jeremie, Hayti. Stuffed.

Eulampis chlorolæmus.— *a*. Barbadoes, W. I. Stuffed. Fragments of *Eurytoma*, *Chalcis*, *Cecidomyia*, *Typhlocyba*, *Jassus*.

Eulampis chlorolæmus.— *b*. Barbadoes, W. I. Stuffed with remains of diptera, etc. Eggs of insects? One entire beetle and part of a second, belonging to the genus *Hypothenemus*, of interest as being a bark borer.

Florisuga mellivora.—Nicaragua. Stuffed with fragments of insects.

Trochilus colubris.— ———? Full.

Trochilus colubris.—Washington, D. C., Aug. 8. Fragments of insects.

Trochilus colubris.—Todmorden, Ontario, Aug. 15. Six specimens of gnats, three of *Entedon*, two species *Bythoscopus*.

Trochilus colubris.—Todmorden, Ontario, Aug. 22. Four young tomisoid spiders.

Trochilus colubris.—St. Catherine's, Ontario. A few fragments of insects.

Trochilus colubris.—Montgomery Co., Pa., Aug. 25. A few fragments.

Trochilus colubris.—Hawkinsville, Fla. Many minute fragments of insects.

Trochilus colubris.—Matamoras, Mexico. Three specimens, all empty.

Trochilus colubris.—Washington, D. C., May 10. Many fragments of spiders. A few rounded grains of sand.

Trochilus colubris.—Washington, D. C., May 10. Fragments of diptera, etc. Two spiders.

Trochilus alexandri.—Fort Wingate, N. M. Two specimens, one full, the other partly full, of insect remains. One specimen had swallowed a splinter of wood a quarter of an inch long.

Calypte costæ.—Cape St. Lucas, Lower Cala. Full of insects and spiders. *Phora*, *Telenomus*, *Polygnotus*, *Typhlocyba*.

Stellula calliope.—Fort Wingate, N. M., July 3. Two specimens. One full of insect fragments, principally diptera and hymenoptera. The second partly full of fragments, including one beetle.

Selasphorus platycercus.—Apache City, Arizona, August. Full of fragments of insects.

Selasphorus rufus.—Apache City, Arizona, Aug. 23. Full of insect remains.

Selasphorus rufus.—Fort Huachuca, N. M. Two specimens, both partly full of insects.

Doricha evelynæ.—Rum Cay, W. I. Full of insect remains.

Basilinna xantusi.—Cape St. Lucas, Lower Cala. Stuffed. *Cecidomyia*, *Phora*, three specimens of *Solenopsis geminatus*, elytra of beetle, *Psyllus*, parts of spiders.

Iache latirostris.—Morelos, Mexico. Partly full.

Chlorostilbon sp. ?—Empty.

ORNITHOLOGY AT THE WORLD'S FAIR.

BY FRANK M. CHAPMAN.

WHILE the zoölogical sciences were assigned no especial place at the World's Fair in Chicago several branches are nevertheless well represented.

The larger mammals receive, in proportion to the number of species, the most attention, the exhibits ranging in size and importance from the finely mounted collections shown by the National Museum and the State of Kansas to the moth-eaten, undressed skins tacked on the wall of some exhibitor's section.

The Fish Commission of course presents an excellent economic display of piscatorial products, and the economics of entomology are well represented by the U. S. Department of Agriculture and the Illinois State Laboratory. Reptiles are exhibited in small numbers by the U. S. National Museum, while the same institution and Ward's Natural Science Establishment have exhibits of invertebrates.

In point of number of specimens probably birds are better represented than any other branch of the animal kingdom. The lack, however, of a section devoted to zoölogy makes it exceedingly difficult to learn the location of a given exhibit even after one has ascertained its existence. Thus collections of birds are displayed in many of the State and foreign build-

ings, and in the vast structures devoted to manufactures and liberal arts agriculture, ethnology, and the exhibits of the United States government.

These collections, using this word in a broad sense, may be classed under three heads: artistic or taxidermic, commercial, and scientific. The first includes exhibits by taxidermists, of which panels of game-birds shown by F. H. Lattin & Co. are probably the best. The second contains such purely commercial exhibits as eiderdown robes from Norway, and feather work from various Central and South American Republics. Here also might be placed a collection of characteristic Bogota skins shown in the building of the United States of Colombia. Other exhibits in both the preceding classes may be passed over. The third class, scientific exhibits, may be divided into four groups, Foreign, United States and Canada, General, and Government.

Foreign Exhibits.—Outside of America there are apparently only two exhibits of foreign birds.

New South Wales, prominent in almost every department of the Fair, has a small case of water birds in the Fisheries Building, and in the Manufactures and Liberal Arts Building a general collection, mounted on the branches of two trees. These birds were without labels. Japan has a small collection of mounted birds, labelled with both scientific and common names.

Of the Central and South American Republics the collection shown by Costa Rica in its own building is incomparably the best. It consists of several hundred well mounted birds bearing labels of the same character as those used by the Smithsonian Institution. The cases are excellent but the birds are rather carelessly arranged and a number of the labels were transposed. In addition to this systematic exhibit Costa Rica devotes one end of the gallery of the building to a somewhat theatric display of characteristic birds, mammals, and reptiles, with presumably natural surroundings, and a large, painted background.

One room of Guatemala's building is given to a grotto from whose crevices peer truly grotesque mammals, while stuffed birds, a part of which are labelled, are wired to the branches of neighboring trees.

Cuba has a small mounted collection of characteristic birds. Trinidad shows a mounted group of bright-colored birds, some

of which are obviously from the mainland. British Guiana has the best local exhibit of foreign mammals, but its exhibit of birds is limited to a few skins of the brighter species.

At the time of my visit several foreign departments were as yet unopened and I cannot, therefore, say whether they contained collections of birds.

United States and Canada Exhibits.— The exhibits under this head include local collections representing the avifauna of a State or Province. As a rule they are official, that is, made by authority of the State.

In this department Illinois is easily leader. Its collection, placed in the State Building, is well-mounted and the method of arrangement is one which might well be followed in the display of similar collections. As a rule a pair of each species is shown under each of the following groups: 'Common Game Birds'; 'Summer Residents throughout Illinois'; 'Winter Residents throughout Illinois'; 'Stragglers in Illinois'; 'Migrants passing through Illinois'; 'Winter Residents of Southern Illinois'; 'Summer Residents of Southern Illinois'; and similar groups from the northern part of the State. There are also excellent groups, with natural surroundings, of Wild Turkeys, Green Herons, Prairie Hens and Red Crossbills, and, in addition, a collection of the eggs of Illinois birds.

At the conclusion of the Fair this collection, nearly all of which was mounted within the brief space of eighteen months, will be removed to the Museum of the University of Illinois. It will there prove a lasting monument to the energy and ability of its preparator, the late Mr. C. F. Adams, whose death, due to overwork, occurred while he was arranging it in Chicago.

Ohio has a well-arranged collection of State birds; North Carolina and Minnesota collections of game birds.

Pennsylvania is represented by a section of the State, giving brooks, ravines, mountains, etc., with the birds and mammals of the State placed with their natural surroundings. The object of exhibits of this kind is, of course, to give at a glance an idea of the fauna of the State, but, as in the present case, the result is apt to be confusing rather than instructive. It would seem better in preparing groups of this kind not to attempt to bring all the birds and mammals of the State into a comparatively small space,

and thus, in what purports to be a natural scene, avoid producing many unnatural effects. If, instead of this, smaller groups were shown, as for example a marsh and pond with characteristic marsh, shore and water birds, a field and roadside with its Finches, etc., would they not convey a truer impression of the avifauna to the mind of the uninitiated?

The Manitoban exhibit is placed in the Manitoba building outside the Fair grounds. It contains a large number of birds mounted on trees, but without labels.

Ontario displays a smaller collection in the Ethnological building.

General Exhibits.—The natural history collections shown in the Ethnological building by Ward's Natural Science Establishment contain representatives of almost every branch of the animal kingdom, and as a whole the exhibit is the most extensive of its kind at the Fair. The collection of birds numbers several hundred specimens and includes representatives of most of the families of the class.

Under the decidedly non-committal label of "Specimens of Birds either Beneficial or Injurious to the Farmer," Brown University exhibits a smaller collection of our commoner species.

United States Government Exhibits.—The collections of birds displayed by the Government include a systematic and popular exhibit by the United States National Museum and an Economic exhibit by the Division of Economic Ornithology and Mammalogy of the Department of Agriculture.

The first is composed of the following collections and groups: (1) A systematic collection of the leading representatives of the families of American birds with family labels, giving a general account of the range and relationships of each family, and species labels, giving the habitat of each species shown. (2) A beautifully mounted collection of the principal game-birds of the world, including most of the North American species. (3) A case of birds whose names are frequently confused as, for example, the American and English Robins, Pheasants, Partridges, Quails, etc. (4) A case of about one hundred and fifty Hummingbirds. (5) A case of some fifty Birds of Paradise. (6) A group of Domestic Fowls. (7) A dovecote with twenty-four varieties of Domestic Pigeons perched upon it. There are also excellently mounted

and designed groups, with natural surroundings, of the English Song Thrush, with a nest and young birds; Butcher Birds, with a field mouse and Dickcissel impaled on thorns; Bower-Birds, with their strangely decorated playhouse; and Ivory-billed Woodpeckers at the entrance to their nest. There are two groups of Carolina Paroquets, one showing the birds on a frosty morning feeding on their favorite 'cockle-burrs,' the other showing the interior of a hollow tree with roosting birds clinging to the side, supporting themselves by the aid of bill, feet and tail. A group of Prairie Hens represents these birds engaged in the singular 'prairie minuet,' while two groups of Ptarmigans give a fine illustration of protective coloration. In the first the birds are in the brown or summer plumage, with surroundings to correspond; in the second they are in the white or winter plumage, with snowy surroundings.

A group of Wild Turkeys occupies a space about thirty-five feet in length and shows the method of capturing these birds by means of the 'Turkey pen.' Two Flamingoes, with their truncate mud nests, constitute a unique group, while Jacanas walking over floating lily-pads show the use of their long toes. A group of nine Wild Pigeons feeding on acorns completes an exhibit which is a credit alike to those who planned and executed it. The birds are exceptionally well-mounted and the exhibit as a whole represents our best efforts in avian taxidermy.

The collection was unfortunately somewhat too crowded to show to proper advantage, and Mr. Ridgway writes me that owing to inadequacy of space he was compelled to re-pack at least one third of the collection sent to the Fair for exhibition.

As a graphic lesson in the relations of birds to man, the exhibit of the Division of Economic Ornithology and Mammalogy has probably never been equalled. Here are groups which tell their own story so plainly that the most casual observer, attracted at first by their beauty, cannot leave them without at least some knowledge of the facts they are designed to explain.

The exhibit is of two kinds, one strictly economic, the other faunal. The first illustrates the food of birds, the second their geographical distribution. The following groups of birds with natural surroundings are included in the first class: A Robin worm-hunting on a bit of lawn, attended by its ever-present

persecutor, the House Sparrow; Cedarbirds feeding on elm beetles; House Sparrows destroying peach blossoms; Bobolinks in their summer dress, and also as Reed-birds in the rice-fields in the fall; Purple Grackles taking grubs from a lawn; Crows in a field of freshly sprouted corn; Kingbirds devouring bees; and Cuckoos feeding on tussock moths.

With each group is a map showing the habitat of the species it accompanies, and a label which explains the economic relations of the bird to man.

There are also mounted specimens of Hawks and Owls and, in desk-cases, skins and colored plates of these birds, surrounded by samples of their food, as mammals, birds, insects, etc., and labels giving the results of the examination of the contents of many stomachs. The Crow is treated in the same manner, and the numerous objects displayed form a striking synopsis of the food of this omnivorous bird.

As explanatory of the manner in which birds may be induced to live near the habitation of man, models of bird-houses occupied by our more familiar birds are shown, and suggestions for encouraging the domesticity of birds are given.

The faunal exhibit of this Division contains twenty-eight large maps showing in detail the distribution of as many species, genera, or sub-genera, a relief map showing the life-zones of North America as they are defined by Dr. Merriam, and a model showing part of the Great Basin slope of the Sierra Nevada opposite Owens Lake, southern California, with the characteristic birds and mammals of the region. This model is intended especially to show the effect of climate on the distribution of life, and is so effectively arranged that it explains itself at a glance. In the foreground, at the base of the mountain, is the arid desert region of the Lower Sonoran zone, with such characteristic species as *Amphispiza bilineata*, *Geococcyx*, *Harporhynchus lecontei*, *Campylorhynchus*, and *Callipepla gambeli*. Passing upward into the sage-brush of the foothills, the Upper Sonoran zone is reached. As representative birds of this zone *Oroscoptes*, *Spizella breweri*, *Melanerpes f. bairdi*, *Chondestes*, and *Aphelocoma woodhousei* are shown. Still ascending, one comes to the Boreal zone with its conifers and, as distinctive species, *Cyanocitta s. frontalis*, *Sialia arctica*, *Picicorvus*, and

Cinclus. This zone reaches the limit of trees, beyond which, and including the snow-capped summits, is the Arctic-Alpine zone with *Leucosticte* as a representative bird.

This group is a large one and includes among mammals the jumping rats of the desert, ground squirrels of the mountains, and the woodchuck and mountain sheep of the higher altitudes. From a scientific standpoint it is doubtless the best single exhibit in zoölogy shown at the Fair.

It is quite probable that in this brief review more than one collection of birds has been overlooked. Two hundred and nine acres covered with exhibits proved as difficult 'collecting ground' as the mazes of a tropical forest, and afforded birds quite as excellent opportunities for concealment.

THE HUDSONIAN CHICKADEE AND ITS ALLIES, WITH REMARKS ON THE GEOGRAPHIC DISTRIBUTION OF BIRD RACES IN BOREAL AMERICA.

BY SAMUEL N. RHOADS.

WHILE examining the series of *Parus hudsonicus* at the Smithsonian Institution to determine the status of *Parus hudsonicus columbianus*, Mr. Ridgway suggested to me the desirability of a careful study of the affinities of the several members of this group described by authors. A request for specimens was made in my description of the British Columbian form of *hudsonicus* in 'The Auk' for January, 1893. No answers to this appeal were received, and after a lapse of two months I started a correspondence with several of the most prominent collectors for the loan of skins. From five of these I received, in all, twenty-five specimens, Mr. Brewster sending seventeen, Prof. J. Macoun two, Mr. K. C. McIlwraith four, Mr. A. G. Kingston one, and the Natural History Society of Toronto one. Several of my Canadian correspondents, from whom I had

expected substantial aid, had not seen the bird in life and their testimony develops the rather unexpected fact that this Chickadee is a rare visitor in Manitoba, Ontario and Quebec, and for that matter, in any non-mountainous locality south of Hudson's Bay.

The total result of my search for skins is a suite of eighty-one specimens, the collections of the Smithsonian Institution, the American Museum of Natural History, and the Academy of Natural Sciences supplying fifty-six, and private individuals twenty-five of these. To the gentlemen who have done me service in this connection I would here again express my sincere thanks.

The great extent of the habitat of *Parus hudsonicus* and the fact that three subspecies and one species, of slight differentiation from the type form, from Alaska, British Columbia and Nova Scotia, have been described by authors, make it imperative that a complete study series should contain many times the number I have collected, and come from many times the number of localities represented. Were it probable that any considerable additions of this kind would be made in the next decade it would be advisable to postpone this paper, but the regions from which specimens are most needed give no promise in this direction. There is, however, enough evidence in the present series to throw considerable light on points in question, and the value of such testimony, incomplete and circumstantial as much of it is, is too great to be thrown away and may justify some risks taken on the theoretical side. Undoubtedly there are many specimens of this bird in America which are yet available, and it is hoped that anyone having such will forward them to the Academy of Natural Sciences at an early date in order that they may be examined, with the original series, at the next meeting of the A. O. U. Committee on Nomenclature.

The Hudsonian Chickadee, *Parus hudsonicus*, was first described by J. R. Forster in the Transactions of the London Philosophical Society for 1772. His description was based on specimens sent him from the Hudson's Bay post at Fort Severn, on the southwest coast of Hudson's Bay, at the mouth of the Severn River. Since that time three races of *Parus hudsonicus* and one closely related species, now classed by the A. O. U. as a subspecies, have been described.

In 1863, Dr. Henry Bryant secured a family of Chickadees at Yarmouth, Nova Scotia, and gave a description of them in the ninth volume of the Proceedings of the Boston Society of Natural History under the name "*Parus hudsonicus*, var. *littoralis*." Dr. Bryant comments on certain differences of size and color between his Yarmouth birds and those from Hudson's Bay, as follows: "The specimens of *Parus hudsonicus* from Yarmouth and those from the Hudson's Bay Territory present as great, if not greater, differences in size than exist between *P. carolinensis* and *P. atricapillus*, and in color between *P. septentrionalis* and *P. atricapillus*." As Dr. Bryant goes into no definite comparisons of the two forms, we must conclude that he considered the Yarmouth birds smaller and darker than those from Fort Severn.

This brings us face to face with the important question as to what are the exact characters of typical *hudsonicus*. We have Forster's original Latin description, which is quite detailed. From it we can adduce only one or two decisive facts. One of these is the measurements; but even these are open to some doubt, owing to the different methods of measurement adopted by naturalists. We are, however, convinced that Bryant's measurements were taken from smaller birds than those of Forster. But these differences are no greater than those I have detected between individuals of a series of over twenty from Campbellton, New Brunswick, all secured in April and May of the same year. When we turn to color definitions to solve the difficulty it only increases our bewilderment. The best we can make out of Forster's description is that the top of the head in *hudsonicus* is "reddish brown"; in another place it is "ferruginous brown"; the back is said to be "ashy green, brownish on longest feathers" and the "ends of the feathers somewhat olivaceous brownish green." Comparing this with *littoralis* whose crown and hind neck are said to be "faded, yellowish ash, with back, scapulars and rump dirty ash" there is only one thing certain,— a belief in Dr. Bryant's mind that *littoralis* was lighter colored than *hudsonicus*. But Bryant's description was taken from a pair of birds which had raised a brood and were in the worn and faded plumage of midsummer. I happen to have three such birds from Steiwacke, Nova Scotia, which well answer Bryant's description but are

worthless for comparisons of the kind under consideration, being not only two or three shades lighter than spring and winter specimens from the same regions but having actually lost two to four millimeters from tips of wings and tail by abrasion. So far as descriptions go we have no proof that Forster's bird is any redder, browner, or darker than average *hudsonicus* from Nova Scotia and New Brunswick, the type region of *littoralis;* and the abraded condition of Bryant's specimens can fully account for the difference in recorded measurements.

A more direct way out of this difficulty would seem to be the comparison of recent skins of each form from their respective habitats. Strictly speaking this has been impossible, for my series includes no skins from nearer the type locality of *hudsonicus* than Moose Factory, four hundred miles southwest of it on the shore of James' Bay. This specimen in size and color is comparable to larger skins from Canada East, and the New England States. As will be hereafter pointed out, the Severn River lies near, but within the northern boundary of the Hudsonian Fauna of the Cold Temperate Sub-region[1] within the eastern limits of which the climatic conditions are presumably quite uniform. West of this a race of *hudsonicus* prevails, distinctly separable from Forster's type on account of its larger size. In northern Labrador a humid-arctic environment has produced a race, which I have here described as new, under the name *ungava* (see below, p. 328), differing in size from largest *hudsonicus* from the southeast and showing marked color characters to distinguish it. So far as we can conjecture from Forster's description, his types approach the Labrador form in the so-called "reddish brown" of the crown, but even this is straining a point in favor of their identity with *ungava* as against their closer affinities with Bryant's *littoralis*.

In the absence of specimens from the west shore of Hudson's Bay the weight of evidence is in favor of assuming that the *P. hudsonicus* of Forster represents the northern extreme of what I have defined as the Hudson-Canadian type and not the southern extreme of the Barren Ground race.

Littoralis has not been recognized by the A. O. U., and is ignored by Mr. Ridgway in his 'Manual.' Dr. Coues makes

[1] The faunal nomenclature adopted is that of Dr. Allen in 'The Auk,' of April, 1893.

casual reference to it in the first edition of his 'Key' but omits it in the second edition.

The total lack of *hudsonicus* skins from the type locality is a fundamental defect, for upon the character of these depends the validity of *littoralis* and *ungava*. Should the Severn River types correspond to the Ungava birds, Dr. Bryant's form must stand and mine be regarded as a synonym of *hudsonicus*. There is a possibility that this is the correct arrangement but, as I have endeavored to show, it is improbable.

Another variety which, as such, has no place in the A. O. U. Check-List, was brought to public notice in 1884 by Dr. Coues in the second edition of the 'Key to North American Birds.' It is briefly introduced as follows:—"*P. h. evura* nobis. Alaska specimens are larger [than *hudsonicus*], the tail nearly 3 [inches]. Thus corresponding with *P. a. septentrionalis* and being quite the size of *P. cinctus*, from which distinguished by retaining precisely the coloration of *P. hudsonicus*." As will be shown, this race is as tenable as any other of the *hudsonicus* group. It is not, even in part, the same as *stoneyi*, which hails from a more arctic environment than any of the specimens examined by Dr. Coues.

P. h. columbianus, a third subspecies, was recently described by the writer in a preliminary report on the Birds of Washington and British Columbia, published in 'The Auk' (Jan., 1893). This race is characterized as larger and darker than any of a series of forty skins from Alaska and from other localities in British America. The type series was taken in the Rocky Mountains of southern British Columbia. Three additional skins, one each from the mountains east and west of the type locality in British Columbia, and one from the Rockies near the northwestern border of Montana, confirm my diagnosis that this race shows the highest development of the group both in size and depth of coloring.

A fourth form of *P. hudsonicus*, described by Mr. Ridgway in the appendix to his 'Manual of North American Birds' as a distinct species, *Parus stoneyi* (classed as a subspecies in our Check-List), is the last member of this perplexing group to claim attention. Its status has already been touched upon. To this list I feel justified in adding a fifth candidate, *P. hudsonicus*

ungava, representing the faunal peculiarities of northern Labrador and Newfoundland.

Geographic and climatic conditions in North America north of the United States result in a primary division of the country into two great life areas, the Temperate and the Arctic. Of these the Hudsonian Chickadee inhabits the southern border of the Arctic Realm and that part of the Temperate defined by Dr. Allen as the Cold Temperate Subregion, or the 'Boreal' of Dr. Merriam's faunal maps.

The Arctic Realm includes that part of the known habitat of *hudsonicus* from which were procured the types of Mr. Ridgway's *P. h. stoneyi* and my *P. h. ungava*. This district may be defined as a strip of varying width reaching along the Alaskan coasts and peninsulas of Bering Sea and the Arctic Ocean to the mouth of the Mackenzie River, thence to the mouth of the Nelson River and northward, including the north coasts of Labrador and Newfoundland. The Cold Temperate Subregion includes the type localities of *P. hudsonicus*, *P. h. evura*, *P. h. littoralis*, and *P. h. columbianus* and covers the remaining area of distribution of the group southward.

In the cases of *ungava* and *stoneyi* we have two races occupying very similar environments of minimum temperature and diminished flora but of differing humidity, and in all probability separated by a vast central area of the Barren Ground Fauna in which *hudsonicus* has no representative because of the almost total absence of trees in those regions. In *columbianus* we have another example of the maximum development of western races which, as in *evura*, Alaskan forms are sure to show, and in which the size generally increases as the habitat approaches the forty-ninth parallel.

Limiting ourselves to resident species of boreal North America, which show a tendency to split up into races, we quite invariably find the largest and darkest colored races in the southwest, either on the west slopes of the Rockies or in the West-Cascade region. The smallest light-colored forms hail from central and southeastern districts, while the extreme northwest and northeast produce forms of an intermediate character between the Rocky Mountain and Atlantic Coast races, the Labrador race being darker and somewhat smaller than its Alaskan counterparts, but not so dark

as the Rocky Mountain form. We may cite as illustrating this plan of racial distribution in Boreal and Arctic America, *Picoides americanus* with its subspecies *alascensis* and *dorsalis*, and *Acanthis linaria* with subspecies *holbœlli* and *rostrata*. One of the tables appended to this paper will show their parallel differentiation with the Hudsonian Chickadees. In the same table I also include certain forms of the Rock Ptarmigan (*Lagopus rupestris*) and the Horned Larks (*Otocoris alpestris*), whose habitats and manner of differentiation have the same correlation with those preceding. Of course the distribution of the Ptarmigans and Horned Larks is, in the first case, more arctic, and in the second, more continental than that of the other three species given, but, considered solely with reference to their boreal distribution, there is more than an ordinary resemblance among them all in spite of the marked differences in their habits.

Owing to the comparative scarcity of summer specimens in the series, I have based all important comparisons on skins secured after the fall moult and before the breeding season, viz., between the fifth of August and the first of May. It would have been preferable to limit these comparisons either to fall or early spring birds but the series was too small to justify it. As in other species of the genus, there seem to be no differences between the sexes of this Titmouse, either in size or color, and I have consequently considered the adults of both sexes as equally representative of the characters ascribed to the species or subspecies under which they are classed.

Seasonal color phases in the *Parus hudsonicus* group are so slight and simple, being chiefly the result of summer bleaching and abrasion, it is easy to make due allowance for such differences when determinations were necessarily made from breeding specimens. The plumage of the young is too poorly represented to warrant special mention.

1. **Parus hudsonicus** *Forst.* HUDSONIAN CHICKADEE.

HABITAT.—All of southeastern British America, except northern Labrador and Newfoundland, from Lake Athabasca and the Nelson River south to mountains of northeastern Minnesota, northern Wisconsin, Michigan, New York, Maine, New Hampshire, Vermont and Massachusetts.

The Hudsonian Chickadee rarely visits the lowlands south of the 47th parallel except on the coast, and it is practically non-migratory. It breeds in the Adirondacks, the White Mountains, and the mountains of Maine, but has not been found in the Alleghanies even in winter. Its distribution west of the Great Lakes is a mystery but as given above probably approximates closely to the lines of the Cold Temperate Subregion as defined by Drs. Allen and Merriam. In the absence of specimens from a vast area to the southeast of the Severn, we may take the average of a series of twenty-five from the United States and Canada. On this basis *hudsonicus* may be characterized as the smallest, and, with the exception of *stoneyi*, the palest of the group. Worn summer specimens from Nova Scotia and New Brunswick are browner and smaller than any others in the entire series. They represent the *littoralis* extreme described by Bryant but show no differences of special diagnostic value from Ontario or United States birds, or from the specimen from Moose Factory. A fine series of spring birds from New Brunswick shows, with selected skins of like date from the United States, that *hudsonicus* is more unicolor on the upper parts, the pale reddish brown of crown differing but slightly from that of back. The same unicoloration is noticeable in *evura*, which is even more decided brown over the dorsal area in that race.

The only common character shared by *hudsonicus* and *ungava*, as compared with their western allies, is in the small size and attenuation of the bill.

Average measurements of 30 adults:—Wing, 61 mm. (58–64); tail, 60 (58–64); tarsus, 16 (15.5–16.5); bill from nostril, 7 (6.5–7.5).

Specimens and localities:—Moose Factory, St. James Bay, 1; Richmond Hill, Ontario 1; Ottawa, Ontario, 1; Beauport, Ontario, 1; Campbellton, N. Brunswick, 19; Point Lepreaux, N. Brunswick, 1; "New Brunswick," 2; Steiwacke, N. Scotia, 2; Halifax, N. Scotia, 1; "Nova Scotia," 1; "Labrador," 2; Island Falls, Maine, 1; Wadley Brook, Maine, 1; Sutton, Vermont, 1; Mt. Adams, Mass., 1; St. Regis Lakes, N. York, 2.

2. **Parus hudsonicus ungava**, subsp. nov. LABRADOR CHICKADEE.

HABITAT.—Northern Labrador.

Subsp. char.—Larger, darker above and with slightly larger bill than *hudsonicus*. Plumbeous brown of crown and nape showing more marked

contrast to colors of upper parts and more extended posteriorly than in any other form. Sides of neck purer ash-gray than *hudsonicus*, that color nearly surrounding and contrasting with the crown as in *stoneyi*.

Adult male and female in spring plumage:—Types,[1] ♂ No. 100,630; ♀, No. 93,565; Coll. Smithsonian Institution, Washington, D. C., coll. by L. M. Turner at Fort Chimo, Ungava, Labrador, March 17 and April 1, 1884.)—Crown, chocolate to plumbeous brown (never pale or ashy brown) well defined posteriorly against the ashy brown of back and laterally against the ash-gray sides of neck, which color, in extreme cases, nearly encircles crown. Dorsal area nearly uniform ashy brown, becoming rusty on rump. Wing feathers not only edged but secondaries distinctly tipped with ashy. Tail uniform slate, less ashy than in *hudsonicus* or *evura*. Throat and bill purer, clearer black; ocular spots larger, nearly black anteriorly and always(?) connected by well-defined frontlet of same color.

Measurements.—♂, No. 100,630; wing, 67 mm.; tail, 67; tarsus, 16.5; bill from nostril, 7. ♀, No. 93,565; wing (abraded) 63 mm.; tail (abraded) 63; tarsus, 16; bill from nostril, 6.6.

This race is as strongly characterized as *columbianus*, from which it differs in its smaller size, shorter and slenderer bill, and richer brown coloration, the brown of crown and nape being less dusky and that of sides more rusty as in *hudsonicus*. Compared with any of its allies, *ungava* shows better color definition, the dark brown of crown and nape contrasting abruptly with ashy cast of back instead of mingling insensibly into the shades of upper parts as in *hudsonicus* and *evura*. The dark spot surrounding the eye is also large and well defined and always present in such specimens as I have, while in all other forms except *columbianus* it is often nearly obsolete. The ashy white of sides of neck in *ungava* is even more noticeable than in *stoneyi* because of the darker hue of crown in former. The nearest ally of *ungava* is undoubtedly *stoneyi*, *evura* coming nearest *hudsonicus*, *columbianus* showing no decided affinities in either direction.

The only portion of the habitat of *ungava* represented by adult specimens is the region about Fort Chimo. A young bird from Rigolette shows same color values as the adults. It is recorded

[1] The only adult spring male in the Ungava series is typical in all respects save in the color of the crown, which is much lighter than the average, and the only typical spring female is somewhat darker than the average and is in worn plumage. No single spring specimen combines the requirements of a type, so I have thought it preferable to meet these requirements in the two skins selected than in a single winter specimen.

by Mr. Packard[1] from Okak, two hundred miles east of Ungava. Mr. McIlwraith sends three specimens labelled "Labrador." Of these probably two were taken south of the habitat of *ungava* and within the range of *hudsonicus*, with which form they seem to perfectly agree.[2] The range of *ungava* is probably coextensive with that of the Arctic Realm across northern Newfoundland. Its westward extension to and beyond the shores of Hudson's Bay can only be conjectured.

Average measurements of 15 adults:—Wing, 65.5 mm. (63 to 68); tail 65, (63 to 68); tarsus 16 2 (16 to 16.5); bill from nostril, 7 (6.5 to 7.5).

Specimens and localities:—Fort Chimo, Labrador, 14; Rigolette, Labrador, 1. "Labrador," (intermediate?) 1.

3. Parus hudsonicus stoneyi *Ridgw.* KOWAK CHICKADEE.

HABITAT.—Northwestern Alaska.

Mr. Ridgway's description of this race not only ignores any subdivision of the species *hudsonicus* but contains no reference to the *evura* of Dr. Coues with which it is almost identical in measurements. The special characters given by Mr. Ridgway to *stoneyi* are, however, in no sense synonymous with those of *evura* as stated by Dr. Coues. *Stoneyi* is characterized as "similar to *P. hudsonicus* but much grayer above, sides of neck purer ash gray, sides much paler rusty and throat clear slate black instead of sooty blackish." The measurements given for *stoneyi* by Mr. Ridgway are greater than his measurements of *hudsonicus* though he included under that name all the rest of the group, but he makes no reference to the comparative size of *stoneyi*, probably from the very reason that other Alaskan birds were as large. On the contrary Dr. Coues bases his *evura* solely on the larger size of Alaskan birds as compared with eastern ones and takes care to state that Alaskan birds retain the precise coloration of *hudsonicus*. My examinations of the two original specimens of *stoneyi*, which still remain the only adult representatives of their race in collections, fully confirm the value of the color diagnosis given to this form by its describer. It may now be more fully characterized as the palest of the group with wing measurements about the same as *ungava*, the bill being stouter

[1] Proc. Bost. Soc. Nat. Hist., Vol. X, p. 267.

[2] Mr. McIlwraith has since written me they all came from "southern Labrador."

and the tail averaging longer, being quite as long as in *columbianus*.

As stated in 'The Auk,' the three specimens of *stoneyi* are in bad shape and lack date of capture. One, in well advanced nestling plumage, is worthless for critical comparisons with adults. The other two are alike and characteristic enough to justify their present status in our nomenclature. Skins of *P. hudsonicus* from Nulato, Alaska, are of interest, confirming the close approach of boreal forms to the Arctic coast in the vicinity of Norton Sound, as defined by Allen and Merriam, such specimens being typical *evura* and not *stoneyi*.

Average measurements of 2 adults:—Wing, 64 mm. (62 to 66); tail, 66 (64 to 68); tarsus, 16.3 (16 to 16.5); bill from nostril, 7.1 (7 to 7.2).

Specimens and localities:—Kowak or Putnam River, Alaska, 3.

4. Parus hudsonicus evura *Coues.* ALASKAN CHICKADEE.

HABITAT.—Central and southern Alaska, west to Nulato, south to Bristol Bay and Fort Kenai, east to the Mackenzie River.

As stated in preceding descriptions, the Alaskan Chickadee seems to as fully merit recognition on account of size as the Kowak River race for its lighter coloration when the two are compared with *hudsonicus*. Mr. Ridgway alludes, in his description of *stoneyi*, to the "browner" appearance of certain Alaskan skins, but considers it merely a seasonal variation. With these skins now before me I find the average color of specimens from the habitat of *evura* is almost identical with that of *hudsonicus* at the same season and would call *evura* a large and much browner *hudsonicus*, intermediate between *hudsonicus* and *columbianus*.

Average measurements of 14 adults:—Wing, 65.4 mm. (60 to 70); tail 65 (61 to 68); tarsus, 16.8 (16.5 to 17); bill from nostril 7.2 (6.7 to 8).

Specimens and localities:—Fort Simpson, Mackenzie River, 3; "Fort Rae," Mackenzie District (?) 2; Fort Yukon, Alaska, 2; Nulato, Alaska, 5; Fort Kenai, Alaska, 2.

5. Parus hudsonicus columbianus *Rhoads.* COLUMBIAN CHICKADEE.

HABITAT.—Rocky Mountains, from the Liard River south into Montana.

Little may be added to the original description of this subspecies. Two additional specimens secured in 1889 in British Columbia have been kindly loaned by Prof. J. Macoun of the Canadian Geological Survey. They confirm the characters assigned to the type specimens, and are of special interest as having been taken respectively on the Gold and Selkirk Ranges, nearly one hundred miles south and west of the central Rockies at Field.

Another specimen of *columbianus*, no less typical, was taken by Mr. G. B. Grinnell in 1888 at St. Mary's Lakes in the Rocky Mountains, a few miles south of the northern boundary of Montana. Besides the absence of any decided shade of brown on upper parts, throat and loral region noticeable in fall specimens of all the other forms, *columbianus* has a longer, much heavier and thicker bill than any of them, that member being nearly twice the calibre of smaller *hudsonicus*.

While *columbianus* may be classed as the greatest remove in the direction of specific separation from *hudsonicus*, I feel no hesitation in classing it, with the others, as nothing more than a subspecies of Forster's type.

Average measurements of 7 adults:—Wing, 67 mm. (65 to 71); tail, 66 (64 to 69); tarsus, 17 (16.5 to 17.5); bill from nostril, 7.6 (7.3 to 8.3).

Specimens and localities:—Field, British Columbia, 4; Eagle Pass, B. C., 1; Toad Mountain, B., C., 1; St. Mary's Lakes Montana, 1.

TABLE OF MEASUREMENTS[1] OF THE *Parus hudsonicus* GROUP.

Skins		Wing	Tail	Tarsus	Bill, from nostril
30	Parus hudsonicus	58–64 (61)	58–64 (60)	15.5–16.5 (16)	6.5–7.5 (7)
15	Parus hudsonicus ungava	63–68 (65.5)	63–68 (65)	16 –16.5 (16.2)	6.5–7.5 (7)
2	Parus hudsonicus stoneyi	62–66 (64)	64–68 (66)	16 –16.5 (16.3)	7 –7.2 (7.1)
14	Parus hudsonicus evura	60–70 (65.4)	61–68 (65)	16.5–17 (16.8)	6.7–8 (7.2)
7	Parus hudsonicus columbianus	65–71 (67)	64–69 (66)	16.5–17.5 (17)	7.3–8.3 (7.6)

[1] Measurements in millimetres.

TABLE SHOWING PARALLEL GEOGRAPHIC VARIATIONS IN CERTAIN BIRD RACES OF NORTHERN NORTH AMERICA.

Hudso-Canadian	Barren Ground	Alaskan-Arctic	Alaskan	Northern Rocky Mountains
Size smallest; color light.	Size large; color dark.	Size large; color lightest.	Size larger; color intermediate.	Size largest; color darkest.
Parus hudsonicus	P. h. ungava	P. h. stoneyi	P. h. evura	P. h. columbianus
Picoides americanus	Picoides, subsp?	(Absent)	P. a. alascensis	P. a. dorsalis
Acanthis linaria	A. l. rostrata	A. l. holbœllii		(Non-resident)
Lagopus rupestris	L. r. reinhardti	L. r. nelsoni et athkensis		Lagopus, subsp?
Otocoris alpestris		O. a. leucolæma		O. a. merrilli

OBSERVATIONS ON THE BREEDING HABITS OF *LARUS ATRICILLA* IN MASSACHUSETTS.

BY GEORGE H. MACKAY.

IN THE neighborhood of Muskeget and Tuckernuck Islands, Massachusetts, Laughing Gulls were formerly much more numerous than at present, being abundant there, I am informed, in 1850. In 1880 they were scarce, yet I am told a few pairs bred on Muskeget Island during that summer. During the past few years they have again appeared in the vicinity of the above-named islands in increasing numbers, undoubtedly from the protection which has been given them. The summer of 1890 showed a considerable increase in their numbers over former years, but the number resident during the summers of 1891 and 1892 was apparently about the same, and possibly there may not have been quite so many in either of those years as in 1890. The summer of 1893, however, shows an increase over 1890, which was the best for a number of years previous to that date.

On May 14, 1893, two birds were seen. and about a dozen more heard; they were very high up. These were the first arrivals noted this season on Muskeget Island. On May 17 a strong breeze from the south was blowing and about twelve birds were seen flying low down over Muskeget. On May 28 about thirty were noted; they were mixed in and flying with the Wilson Terns (*Sterna hirundo*) and were hovering close to the ground. On June 7, 1893, four nests were discovered near the centre of the island, being the first found this season. One of these contained two eggs, the others being empty. The most of the birds, however, seemed to be collecting on the north side of the island with the evident intention of breeding in that locality.

They usually appear about these islands during the month of May, and depart in October. The first birds were noted in 1892 on May 10 (two pairs) at the north pond, Tuckernuck. In 1893 they were first noted on May 7 near the same place (four pairs).

They prepare their nests about the first of June; these are regularly constructed and are composed of interwoven dried sea grass (*Zostera marina*), grass, and stubs of beach grass (*Ammophila arundinacea*). The inside of the nest is about the size of an ordinary saucer, and it is usually placed at the foot of a tall bunch of grass, under a bush, or in beach peas (*Lathyrus maritimus*). Often it is well concealed; at other times it is exposed to view and easily seen at a distance of a few feet. I have also seen it placed on top of a bunch of old beach grass stubs surrounded by beach peas, which is a favorite location. This was noticeably the case in 1893, when on June 20 I found eight nests, and one on July 3 with two eggs, in such position that all were within forty yards of each other. They nest in colonies in this locality, and when one nest is discovered it is nearly certain others may be found near by.

In the summer of 1892 these birds nested on Muskeget between the slight headland (one of the old shore lines) and the shore, on the north side of the island and within two hundred and fifty yards of the ocean and about twenty-five yards from a small fresh water pond. The nests were placed on the slope of the headland towards the shore, where there was an abundance of rank grass about two feet and a half high. In 1891 a few pairs built in a salt marsh or meadow on the south side of the island, the nests

being placed on one of the higher sand ridges or hummucks, with which the marsh was interspersed, and which were covered with high grass. A few pairs (three or four) nested very near this same place in June 1893, but the larger number I found to be nesting about fifty yards further inland from the spot where they bred in 1892. This nesting place was in a depression or basin where the beach peas were growing in profusion, and here I found nine nests (all the eggs in which were partially incubated), all of which were composed entirely of beach grass stubs about five or six inches long, interwoven and placed on top of a cluster of dead stubs of the same material the tops of which had disappeared, which raised the nest some five or six inches from the sand. There was little attempt made at concealment, that little being furnished by the higher growth of the beach peas which surrounded them. These two places were the only ones on the island where I discovered their nests, or noticed that they congregated and I much doubt if there are any others in this locality. Of the nine nests discovered each contained three eggs except two which had two only. On June 22, 1893, four or five more nests were discovered by some of my friends not far from where I found mine, all of which contained three eggs each. I was on the island of Muskeget July 3 and 4, 1893, but saw no young. While I am not certain how many eggs constitute a complete set, I am of the opinion that the number is three.

During the summer of 1890 four nests were found on July 10, each of which had five eggs, and in 1891 and 1892 other nests were found which also had five eggs in each, all the other nests discovered in these years having two or three eggs each. It is possible more than one female may have deposited eggs in the same nest. The eggs are nearly if not quite three times as large as those of *Sterna hirundo*, which some of them somewhat resemble, though darker in color, being as large as a pullet's egg. Their ground color is pale olivaceous, with a slight tinge of brown which last in some eggs shows stronger than in others. In some sets this ground color assumes a muddy appearance, while in others it is quite clear. The entire egg is covered over with dark chocolate-colored irregular marks and spots, which in some eggs run one into the other at the larger end, making it the most prominently chocolate-marked portion of the egg.

When walking over Muskeget Island I have noticed that these birds leave the nest when I am a *long* distance away, being probably apprised by the commotion made by the other Terns, as the Wilson's (*Sterna hirundo*), Arctic (*Sterna paradisæa*) and Roseate (*Sterna dougalli*), of my invasion of their precinct, and mounting high in the air circle around, continually giving vent to their peculiar cries. They have two distinct ones, but I do not feel competent to so put letters together that they will convey the sound of either to the reader. One of these is the peculiar note from which this bird probably derives its name of Laughing Gull, it being a weird, wild, maniacal sound, bearing a resemblance to a laugh, which at once impresses one on being heard. I should not call them courageous birds, as far as I have observed them, for I have frequently seen a single *Sterna hirundo* chase and put one to flight, which would endeavor to escape without offering any resistance. I have also seen four or five Laughing Gulls *concertedly* chase and put to flight a single *Sterna hirundo* which offered no resistance to such odds.

While I do not know if it is always the case elsewhere, I have often noticed that these Gulls keep together and fly in pairs, and even if a number are about, this characteristic is noticeable. Should danger be apprehended they will mount high in the air and circle, continually uttering their peculiar cry, which can be heard for a very long distance. I consider them rather shy except when they have young.

ADDITIONAL NOTES ON THE BIRDS OF THE SUWANEE RIVER.

BY ARTHUR T. WAYNE.

THE month of March, 1892, the writer spent at Branford, Florida. Trips were made on both sides of the river, and as far down as where the Santa Fe Creek empties into the Suwanee. This region has already been described by Messrs. Brewster and Chapman, therefore I will not describe it anew. The following

species which I observed during the month of March, were not recorded by Messrs. Brewster and Chapman.

Tantalus loculator.

Aramus giganteus.— Common all along the Suwanee. From Santa Fe Creek to Week's landing, fifteen miles from the Gulf, I found this species actually common. It breeds in March.

Totanus flavipes.

Ægialitis vocifera.— Common resident.

Colinus virginianus floridanus.— I found the Quail very abundant at Branford, and throughout the forests bordering the river.

Accipiter cooperi.— Breeds. A common species, even in June, when it was the terror of the poultry yard.

Falco sparverius.— A common resident.

Megascops asio floridanus.— Resident. All I examined were in the red phase.

Antrostomus vociferus.— I shot a single individual on March 16, but it was badly mutilated and only the tail feathers were preserved. The keeper of the hotel who is very familiar with this bird, told me he heard its note every spring at Branford.

Zonotrichia albicollis.

Spizella socialis.

Spizella pusilla.

Certhia familiaris americana.— The Brown Creeper was common from March 10 to 20, inclusive.

The first week in April I left Branford and went to Old Town, sixty miles down the river, where I remained until the first week in August. I visited Old Town again in February, 1893, and remained until the last week in May. I give here a list of the birds I observed which have not been recorded from this region, with dates of arrival.

Pelecanus erythrorhynchos.— This is a common species on the Gulf, near the mouth of the river, where they congregate in vast numbers. It remains until the middle of May.

Fregata aquila.— Occasionally seen flying very high over the river just before a storm. Also seen at 'Fishbone.'

Botaurus lentiginosus.— One bird noted March 3, 1893.

Ionornis martinica.— April 8 (1892). Breeds.

Gallinula galeata.— April 10 (1892).

Ictinia mississippiensis.— April 20 (1892).

Coccyzus americanus.— A common species. Breeds in May.

Chordeiles virginianus chapmani.— April 5 (1892).

Contopus virens.— April 23 (1892).

Empidonax acadicus.— April 15 (1892). Breeds commonly in the swamps.

Dolichonyx oryzivorus.— April 15 (1892).

Icterus spurius.— An immature male observed April 23, 1893.

Poocætes gramineus.— Common until April 15.

Passerina cyanea.— April 25 (1892).

Vireo solitarius alticola.— The only specimen, secured February 23, 1893, must be referred to this form.

Helmitherus vermivorus.— April 4 (1892).

Dendroica tigrina.— An adult male in high plumage, taken April 15, was the only one seen.

Dendroica cærulescens.— April 18 (1892).

Dendroica pensylvanica.— April 10 (1892).

Dendroica striata.— April 24 (1893). Not common.

Seiurus noveboracensis.— Taken April 24, 1893.

Geothlypis agilis.— This species arrives late. I shot a female on May 10 and a male the next day. Both were on the ground, among saw palmetto, in the river swamp.

Geothlypis formosa.— April 21 (1892).

Turdus mustelinus.— Only a single bird heard singing April 24, 1893.

The following species evidently winter numerously in this region, as fifty or more individuals of each were noted on February 13, the time of my arrival: *Mniotilta varia*, *Compsothlypis americana*, *Seiurus aurocapillus*.

REMARKS.

Campephilus principalis.— I obtained thirteen specimens in April, and saw about ten more. A young female taken April 15, was about two weeks from the nest. I never observed it singly, it being always seen in company with two or three others of this species. I was told by old hunters that they breed early in February. The locality where this bird is to be found at all times is what the people call 'burn-outs.' These are large tracts of heavy timber which the forest fires have destroyed; and the dead trees harbor beetles, etc. A nest which I examined was dug in a live cypress about fifty feet high.

Vireo flavifrons.— I found this bird breeding commonly everywhere. A pair had their nest in a large red oak tree near the house in which I was staying.

Helinaia swainsonii.— Breeds abundantly on the lower Suwanee. This is the most southern record of its breeding.

Helminthophila bachmani.— This species is only a migrant. It does not breed in the Suwanee River bottom, as Mr. Brewster suspected. I secured, all told, about fifty specimens.

OBSERVATIONS ON THE BIRDS OF JAMAICA, WEST INDIES.

BY W. E. D. SCOTT.

II. A LIST OF THE BIRDS RECORDED FROM THE ISLAND, WITH ANNOTATIONS.

(*Concluded from p. 181.*)

177. **Ampelis cedrorum** (*Vieill.*). CEDARBIRD.—Recorded by Gosse (Birds of Jamaica, 1847, p. 197), on the authority of Mr. Hill.

178. **Laletes osburni** *Scl.*—Not observed at the points visited by the writer.

179. **Vireo altiloquus** *Gamb.* WHIP-TOM-KELLY.—A migrant and summer resident. Said to be common in the regions near the coast. Not observed during the time spent on the island.

180. **Vireo modestus** *Scl.* SEWY-SEWY.—A rather common species at all points which were visited. The birds were generally associated in pairs and reminded one strongly, in their method of life and general habits, of *Vireo noveboracensis*. Up to the time of my departure from the island these birds showed no signs of the approach of the breeding season.

181. **Cœreba flaveola** (*Linn.*). BLACK-AND-YELLOW HONEY-CREEPER. HONEY-SUCKER. BANANA QUIT.—One of the most abundant and generally distributed species. Often at Boston a dozen could be seen on the trees and bushes close to the house. There is much variation in the intensity of the dark color of the throat. From intense, clear, dark slate, almost black, at one extreme, every grade is to be found to faint slate color much mixed with yellow feathers of the same color as the belly.

These birds had not begun to breed at the time I left Jamaica. Gosse speaks of finding the nests "in those low trees and bushes, from which depend the paper nests of the brown wasps," and gives May, June, and July as the breeding season. (Birds of Jamaica, p. 85.)

182. **Cœreba cyanea** (*Linn.*).—Mr. C. B. Taylor took on Elletson Road, Kingston, on May 17, 1890, an adult male of this species, which is now in the author's collection (No. 12,946). There seems possibility that this may have been an escaped caged bird, as the tail-feathers are somewhat worn; it must, however, be recorded as having been observed and taken on the island.

183. **Glossiptila ruficollis** (*Gmel.*). ORANGE QUIT. BLUE QUIT.—Not quite as common as *C. flaveola* and more confined to the higher altitudes, though also observed at the sea level. There is a great preponderance of females and males in immature plumage, over the adult males,

blue with bright chestnut throat patch. Of forty-nine individuals collected but fourteen are adult males. Two birds are in intermediate plumage though not moulting, showing traces of the blue adult plumage and some chestnut feathers on the throat. The birds bred in June and the nest is described by Gosse (Birds of Jamaica, p. 237). Quite gregarious at Stony Hill. In December the birds feed exclusively on mangos, 'sour sop,' and other wild fruits, so far as could be ascertained.

184. **Mniotilta varia** (*Linn.*). BLACK-AND-WHITE WARBLER.—Not uncommon during December and January at all points visited on the island.

185. **Helinaia swainsonii** *Aud.* SWAINSON'S WARBLER.—Recorded by A. & E. Newton (Handbook of Jamaica, 1881, p. 105). Mr. Taylor regards this and the following species as very rare on the island.

186. **Helmitherus vermivorus** (*Gmel.*). WORM-EATING WARBLER.—Specimens of this species were taken at Stony Hill on December 1, 13, and 16, 1890, and at Priestman's River on January 8 and 17, 1891. It seems to be a regular winter resident, though rare.

187. **Compsothlypis americana** (*Linn.*). PARULA WARBLER.—A common migrant and winter resident. Met with at all points visited.

188. **Dendroica tigrina** (*Gmel.*). CAPE MAY WARBLER.—A not uncommon winter resident. Individuals were procured at all points where collecting was prosecuted, some ten in all.

189. **Dendroica petechia** (*Linn.*).—At Buff Bay on December 24, 1890, I saw a Yellow Warbler which was probably to be referred to this form, and this was the only time that the species was observed by me. Gosse regarded it as a migrant and winter visitor. (Birds of Jamaica, p. 157.)

190. **Dendroica eoa** (*Gosse*). AURORA WARBLER.—The type specimens of this species are in the collections of the British Museum. They were taken in January (21 and 24) in the same locality on the island by the late Philip Henry Gosse.

191. **Dendroica cærulescens** (*Gmel.*). BLACK-THROATED BLUE WARBLER.—A rather common winter resident, and generally distributed.

192. **Dendroica coronata** (*Linn.*). MYRTLE WARBLER.—Observed throughout the winter months in small companies, and not generally distributed.

193. **Dendroica striata** (*Forst.*). BLACKPOLL WARBLER.—For records of this species see A. & E. Newton, Handbook of Jamaica, 1881, p. 106.

194. **Dendroica pharetra** (*Gosse*). ARROWHEADED WARBLER.—A species described by Gosse from a single individual taken on the 9th of February on the top of Bluefields Peak.

195. **Dendroica dominica** (*Linn.*). YELLOW-THROATED WARBLER.—A common winter resident and probably breeds, though Gosse regarded it as a migrant species, and yet speaks of individuals obtained on August 16.

196. **Dendroica dominica albilora** *Baird.* SYCAMORE WARBLER.—Of forty-six Yellow-throated Warblers collected on the island twenty-two are referable to *D. dominica* and twenty-four are clearly typical represent-

atives of *D. dominica albilora*. These birds were collected at several points, but were perhaps a little more common at the lower levels.

197. **Dendroica virens** (*Gmel.*). BLACK-THROATED GREEN WARBLER.—Not met with by the author. See A. & E. Newton, Handbook of Jamaica, 1881, p. 106.

198 **Dendroica palmarum** (*Gmel.*). PALM WARBLER.—Taken at Stony Hill and at Priestman's River, and noted at Kingston. Not very common.

199. **Dendroica palmarum hypochrysea** *Ridgw.* YELLOW PALM WARBLER.—A single individual was observed in a garden in Kingston on December 20, 1890, by the author.

200. **Dendroica discolor** (*Vieill.*). PRAIRIE WARBLER.—A rather common species at the points visited. Some probably breed on the island, for Gosse recorded the species on the 18th of August. (Birds of Jamaica, p. 159.)

201. **Seiurus aurocapillus** (*Linn.*). OVENBIRD.—A not uncommon winter resident.

202. **Seiurus noveboracensis** (*Gmel.*). WATER-THRUSH.—Met with but once on the island, ♂ (No. 10,524), Priestman's River, 21 January, 1891.

203. **Seiurus motacilla** (*Vieill.*). LOUISIANA WATER-THRUSH.—Taken at Stony Hill and Priestman's River, six specimens in all. A rather common winter resident.

204. **Geothlypis trichas** (*Linn.*). MARYLAND YELLOWTHROAT.—Obtained at all points visited. A common winter resident. I did not remain late enough on the island to ascertain if the species breeds there.

205. **Sylvania mitrata** (*Gmel.*). HOODED WARBLER.—Not observed. See Baird, Rev. Am. B., p. 239, and A. & E. Newton, Handbook Jamaica, 1881, p. 106.

206. **Setophaga ruticilla** (*Linn.*). AMERICAN REDSTART.—A common winter resident. Probably breeds, as Gosse records it from the mountains of St. Elizabeth on August 10. (Birds of Jamaica, p. 165.)

207. **Mimus hillii** *March.*—Very local in distribution and appears to be rare even where it occurs. I did not meet with representatives. At a point near Port Henderson, about opposite Port Royal, across the bay, is a point known as Salt Pond hills. It is an arid region with much cactus growing. Mr. C. B. Taylor tells me that he has met with this species only at this point, where he took two birds in June, 1891.

208. **Mimus orpheus** (*Linn.*). JAMAICA MOCKINGBIRD. One of the most abundant and conspicuous species in the lowlands, becoming more uncommon at high altitudes. Seen everywhere and in full song late in December and early in January. They were nesting generally at Priestman's River by February 20.

209. **Myadestes solitarius** *Baird.* SOLITAIRE.—Said to be an abundant species at all points of very high altitude, and commonly believed to be restricted in its lowest range to about 5000 feet above the sea. On Febru-

ary 5, 1891, in the hills back of Priestman's River, at an altitude of 1500 feet above the sea, these birds were not at all uncommon, but were shy and difficult to obtain. They were well known to the people living in the vicinity, who call them 'Nightingales,' and who say they live here the year around and breed. This is the only point where I found these birds, and during my stay I procured but three individuals though many were seen and heard.

210. **Merula aurantia** (*Gmel.*). HOPPING-DICK. TWO-PENNY-CHICK. —This species, closely allied to the following one, is found at lower levels, in fact down to the sea, in thick, woody places. I frequently heard, but very rarely saw this Thrush, and only secured a few examples. It is said to have been formerly very common, and is doubtless one of the species which has suffered by the introduction of the mongoose. For a description of the breeding habits see Gosse, Birds of Jamaica, p. 14.

211. **Merula jamaicensis** (*Gmel.*). SHINE-EYE. GLASS-EYE.—Rather common in the thick woods above fifteen hundred feet, but very shy and difficult to collect, frequenting very thick jungles, and often heard, but seldom seen.

212. **Turdus mustelinus** *Gmel.* WOOD THRUSH.—Not observed. Recorded by Gosse, Birds of Jamaica, p. 140.

PRELIMINARY DESCRIPTIONS OF ONE NEW SPECIES AND TWO NEW SUBSPECIES OF BIRDS FROM THE ISLAND OF TRINIDAD.

BY FRANK M. CHAPMAN.

THE PUBLICATION of a paper on the birds of the Island of Trinidad, based on collections and observations made during March and April of the present year, being unavoidably delayed, I have decided to present here brief diagnoses of several new birds which will be described at length in a future number of the Bulletin of the American Museum of Natural History.

Chlorospingus leotaudi[1] sp. nov.

Char. sp.—Apparently most like *C. chrysogaster* Tacz. in coloration but much smaller and with a larger bill.

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[1] Named in honor of the late Dr. A. Léotaud, author of 'Oiseaux de l'Ile de la Trinidad.'

Description of type (coll. Am. Mus. No. 59,051, female, Princestown, Trinidad, March 28, 1893, F. M. Chapman).—Crown and nape cinereous washed with olive green, back bright olive green, wings and tail fuscous, the exposed margins of the feathers olive green; auriculars cinereous, throat and upper part of the breast pale grayish white, rest of the under parts bright yellow; bill horn-black, feet brownish black; wing, 2.40; tail, 2.25; exposed culmen, .50; height of bill at anterior margin of the nostril, .22 in.

Basileuterus vermivorus olivascens subsp. nov.

Char. Subsp.—Similar to *B. vermivorus* (Vieill.) but the bill averages larger and the upper parts are constantly grayer. (Type, coll. Am. Mus. No. 58,974, adult male, Princestown, Trinidad, March 1, 1893, F. M. Chapman.)

Myrmeciza longipes albiventris subsp. nov.

Char. subsp.—Similar to *M. longipes* (Swains.), but somewhat smaller and with the flanks and abdomen pure white, slightly or not at all washed with cinereous. (Type, coll. Am. Mus. No. 59,329, adult male, Princestown, Trinidad, March 10, 1893, F. M. Chapman.)

RECENT LITERATURE.

Shufeldt on Fossil Birds from Oregon.—In a quarto memoir[1] of thirty-five pages, with three plates, Dr. Shufeldt gives the final results of his studies of several hundred fossil bones of birds, collected at Fossil and Silver Lakes, Oregon, by Professors Thomas Condon and E. D. Cope, of which a preliminary account was given in the 'American Naturalist' for April, 1891 (pp. 359–362). "The Silver Lake Region of Oregon is considered to be of the latest Tertiary formation of the horizon known as the Equus Beds." About 50 species were recognized, of which 27 are positively identified with species still existing in the region, 5 as probably identical with living species, and 17 as extinct, as follows:—

[1] A Study of the Fossil Avifauna of the Equus Beds of the Oregon Desert. By R. W. Shufeldt, M. D. Journ. Acad. Nat. Sci. Phila., Vol. XI, pp. 389 425, pll. xv-xvii, 1892.

Existing Species.

Æchmophorus occidentalis
Colymbus holbœlli
Colymbus auritus
Podilymbus podiceps
Larus argentatus smithsonianus
Larus californicus?
Larus philadelphia
Xema sabinii
Sterna elegans?
Sterna forsteri?
Hydrochelidon nigra surinamensis
Pelecanus erythrorhynchos
Lophodytes cucullatus
Anas boschas
Anas americana
Anas carolinensis
Anas discors
Anas cyanoptera?
Spatula clypeata
Dafila acuta
Aix sponsa
Aythya marila nearctica?
Glaucionetta islandica
Clangula hyemalis
Branta canadensis
Anser albifrons gambeli
Chen hyperborea
Fulica americana
Phalaropus lobatus
Tympanuchus pallidicinctus
Pediocætes phasianellus columbianus.
Bubo virginianus.

Extinct Species.

Larus robustus, sp. nov.
Larus oregonus, sp. nov.
Phalacrocorax macropus (*Cope*)
Anser condoni, sp. nov.
Branta hypsibatus *Cope*
Branta propinqua, sp. nov.
Olor paloregonus (*Cope*)
Phœnicopterus copei, sp. nov.
Ardea paloccidentalis, sp. nov.
Fulica minor, sp. nov.
Pediocætes lucasi, sp. nov.
Pediocætes nanus, sp. nov.
Palæotetrix gilli, gen. et sp. nov.
Aquila pliogryps, sp. nov.
Aquila sodalis, sp. nov.
Scolocophagus affinis, sp. nov.
Corvus annectens, sp. nov.

It thus appears that the bird life of this region in Pliocene time was not so very different from that of the same area today. As Dr. Shufeldt observes: "Great flocks of Swans, Geese and Ducks were there, feeding on the marshy shores of the lake or disporting themselves upon its waters. With but few exceptions they were of modern genera and species. A ponderous Goose appeared among them, perhaps but sparingly during Pliocene time, for it must have been nearly extinct. And a Swan, too, whose race has since died out was also there, but it was of a size quite in keeping with present day Swans. . . . To these groups we must add many individuals of a species of a great, strange Cormorant (*P. macropus*), larger than any of our existing Comorants. . . . But the strangest figure upon the scene among the birds was a true Flamingo. It could not have been very abundant, for it has left but scanty remains. Still it was there, and its presence has its meaning, — it may even suggest ideas

as to what the climate may have been in those times. . . . To speak again of the climate, it might well be compared with the present climate of Florida and the lower part of Louisiana, with the vegetation fully as luxuriant as it is now in those parts and with the palms more abundantly represented."

Dr. Shufeldt's memoir is thus a very interesting and important contribution to the early history of bird life in North America. Although he has fortunately had a comparatively large amount of material for examination, the field is obviously not exhausted, so that much may be hoped from further exploration of even this same region.— J. A. A.

Shufeldt on Ichthyornis, and on the Classification of the Longipennes. — In a paper entitled 'Comparative Osteological Notes on the Extinct Bird *Ichthyornis*'[1] Dr. Shufeldt reaches the conclusion that this type, while resembling in many points the Gulls and Terns, shared more characters in common with the Skimmers. Much of the paper is, in fact, given up to a discussion of the relationship of the Skimmers (Rhynchopidæ) to the Laridæ, reaching the conclusion that while the Gulls and Terns gradually approach each other, through such forms as *Xema*, *Creagrus*, and *Gelochelidon*, as long since stated by Coues, the Skimmers are sharply separated from either, and are well entitled to the rank of a distinct family, as placed in the A. O. U. Check-List. In a later paper[2] he returns to the subject, and after reviewing various previous classifications of the group, proposes that already adopted in the A. O. U. Check-List as best agreeing with his extended osteological studies of the North American forms.— J. A. A.

The Affinities of Hummingbirds and Swifts.— The pros and cons of the relationship of Hummingbirds and Swifts have recently been presented in various more or less controversial papers on the subject by Dr. Shufeldt[3] and Messrs. Ridgway[4] and Lucas.[5] As is well known, Dr.

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[1] Journ. Anat. and Phys., XXVII, pp. 336–342.

[2] On the Classification of the Longipennes. By R. W. Shufeldt. Am. Nat., March, 1893, pp. 233–237.

[3] Ridgway on the Anatomy of Hummingbirds and Swifts. By R. W. Shufeldt. Am. Nat., April, 1892, pp. 869, 870.

Ridgway on the Anatomy of the Hummingbirds and Swifts.— A Rejoinder. By R. W. Shufeldt. Am. Nat., April, 1893, pp. 367–371.

Comparative Notes on the Swifts and Hummingbirds. By R. W. Shufeldt. Ibis, Jan., 1893, pp. 84–100.

[4] Shufeldt on the Anatomy of the Hummingbirds and Swifts. By Robert Ridgway. Am. Nat., Dec., 1892, pp. 1040, 1041.

[5] Swifts and Hummingbirds. By Frederic A. Lucas. Ibis, July, 1893, pp. 364–371 (with nine cuts in the text).

Shufeldt has for some time contended that while Swifts and Hummingbirds have some superficial resemblances, they are in no way closely related, and should constitute two separate suborders, and that the Swifts are in reality only highly modified Swallows. In 'The Ibis' for January, 1893, he has presented his evidence anew and discussed the subject at length. In the following number of 'The Ibis' (July, 1893) Mr. Lucas has presented at moderate length the counter-evidence, taking apparently well-founded exceptions to a number of Dr. Shufeldt's propositions. In this connection Mr. Lucas objects to "sweeping generalizations based on the examination and comparison of a limited number of local forms and the assumption that certain questions have been definitely answered when we are really just beginning to gather in the facts that shall make such answer possible."—J. A. A.

Ridgway on New Birds from Mexico and the West Indies.—Mr. Ridgway has recently described two new subspecies of *Basileuterus rufifrons* from Mexico,[1] namely, *B. r. jouyi*, from San Luis Potosi, and *B. r. dugesi* from Guanajuato, western Mexico. Also a new species of *Odontophorus* (*O. consobrinus*) from Mirador, southern Mexico,[2] allied to *O. guttatus*. Mr. Ridgway has also described two new Swifts,[3] one, *Chætura lawrencei*, from Grenada, West Indies, the other, *Cypseloides cherriei*, from Costa Rica. The first is allied to *C. guianensis* Hartert, and belongs to the *C. cinereiventris* group, to which Mr. Ridgway considers both must be referred as subspecies of *C. cinereiventris*. The *Cypseloides cherriei* finds its nearest relative in *C. brunneitorques*.—J. A. A.

Stejneger on Japanese Birds.—Dr. Stejneger has recently made two additions[4] to the Japanese avifauna, one being *Tringa temminckii* (Leisl.), from the neighborhood of Tokyo, the other *Acanthopneuste ijmæ* sp. nov., from Seven Islands, Japan, allied to *A. coronatus*. He has also published a short paper[5] on a specimen of Gray Shrike from Yezo, which he refers to *Lanius sibiricus* (Bogd.), and incidentally considers the relationship of *L. borealis* and *L. sibiricus* to *L. excubitor*, regarding

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1 Descriptions of Two New Forms of *Basileuterus rufifrons*, from Mexico. By Robert Ridgway. Proc. U. S. Nat. Mus., XV, p. 119.

2 Description of a supposed New Species of *Odontophorus* from southern Mexico. By Robert Ridgway. *Ibid.*, XVI, pp. 469, 470.

3 Description of two supposed New Species of Swifts. By Robert Ridgway. *Ibid.*, XVI, pp. 43, 44.

4 Two Additions to the Japanese Avifauna, including description of a New Species. By Leonhard Stejneger. Proc. U. S. Nat. Mus., XV, pp. 371–373.

5 On the Status of the Gray Shrike, collected by Capt. Blakiston, in Yezo, Japan. By Leonhard Stejneger. *Ibid.*, XVI, pp. 217, 218.

them all as distinct species, contrary to the recently expressed opinion of Mr. Dresser (Ibis, 1892, pp. 374–380).—J. A. A.

Food Habits of Birds.—The Annual Report of the Chief of the Division of Ornithology and Mammalogy of the U. S. Department of Agriculture for the year 1892[1] contains, besides Dr. Merriam's account of the work of the Division for the year, a paper by Mr. Walter B. Barrows on 'Economic Ornithology' (pp. 193–200), which includes, besides a general statement of the progress of the work, a report on the 'Food of the Horned Larks (*Otocoris*)' by Mr. Barrows, and a report on the 'Food Habits of the Cedarbird (*Ampelis cedrorum*)' by Mr. F. E. L. Beal. Mr. Barrows concludes that Horned Larks are essentially granivorous, but subsist more or less on insects at all times, and that the nestlings are mainly fed with insects. There is of course no evidence of discrimination on the part of the birds between injurious and beneficial insects, but the whole amount of insect food—"9¼ per cent. for the whole year"—is too small to be of economic importance. While they occasionally pick up some newly sown grain or grass seed, the loss on this account must be trifling, their food consisting mainly of the seeds of useless or noxious weeds, and they are thus clearly entitled to protection.

Mr. Beal's conclusions in respect to the Cedarbird are that 17 per cent. of its food consists of insects and that the largest proportion of insect food is taken during the season when fruit is most abundant, and that the young while in the nest are fed to a very great extent upon insect food. Among the insects eaten were several noxious species, as the elm leaf beetle and various caterpillars.—J. A. A.

Hasbrouck on 'Evolution and Dichromatism in the Genus Megascops.'—In a recent paper[2] in the 'American Naturalist' Mr Hasbrouck has attempted a solution of the problem of dichromatism in the Screech Owls of eastern North America. The paper is evidently the result of much patient labor and presents some new information respecting the distribution of the red and gray phases of this well-known bird, his facts being presented both in tabular form and graphically by means of maps. While the paper, on casual inspection, might be regarded as an interesting and in some ways a valuable contribution to the subject under consideration, a closer examination shows it to be nearly worthless, even as regards the data on which it is ostensibly based. Hence of course we can hardly share the author's confidence that we are here presented with a satisfactory solution of the problem of dichromatism as presented in our *Megascops asio*.

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[1] Report of the Ornithologist and Mammalogist for 1892. By C. Hart Merriam. Rep. Sec'y of Agriculture for 1892 (1893), pp. 181–200.

[2] Evolution and Dichromatism in the Genus Megascops. By E. M. Hasbrouck. Am. Nat., 1893, pp. 521–533, 638–649, with 5 maps.

Mr. Hasbrouck divides his paper into two parts: I. 'Relationship of Dichromatism to Evolution'; II. 'Causes and Influences.' In Part I, after giving a history of the views formerly held by ornithologists as to whether the red and gray phases were distinct species or merely two forms of the same species, the author takes up the subject of the geographical distribution of these two color phases, and the "relation of dichromatism to evolution" in the Screech Owl group. In regard to the distribution and evolution of the two phases and of the intermediate stages, he finds that "dichromatism is principally confined to the typical form of *Megascops asio*, appearing but slightly in the Florida form (*Megascops a. floridanus*), and barely reaching the Texan subspecies, *mccallii*," the western and southwestern forms of the group "remaining true to their normal color." He attempts to show, "first, that while the red, the gray and the intermediate phases are at present but individual variations of the same species —the gray was the ancestral stock; second, that from the gray bird has evolved the red, which at some future time will be recognized as a subspecies with a range peculiar to itself, and thus dichromatism is one step in the evolution of the Screech Owl, while the various phases exhibited are the transitorial stages of development of one species into another; third, that this condition of affairs is influenced by four powerful factors," two of which are temperature and humidity, "the most potent of which is temperature; fourth, that the *predominating* distribution is largely confined to the faunal divisions of the eastern United States, and as such is approaching the subspecific differentiation of the two phases; lastly, that the Darwinian theory of 'Reproduction with variation and the survival of the fittest,' is well exemplified in our common little *Megascops asio*."

In support of these various propositions he presents data to show that the gray phase is the only form along the northern border of the range of the species, and that its distribution about coincides with the boundaries of the Canadian Fauna, except that it turns abruptly southward in Minnesota and extends down to Middle Kansas. Below this is a somewhat similar belt where mixed birds occur with the gray phase predominant; while below this red birds prevail nearly to the Gulf Coast, where gray birds again begin to predominate and finally gray *only* occur over most of Florida. Red birds alone appear to be found about Washington, and over quite a belt along the Mississippi River, from about the mouth of the Missouri to the mouth of the Arkansas. An examination of his table of localities on which his generalizations, as graphically represented on his Map II, are based, however, shows that the observations are far too scanty to render it at all certain that these sweeping conclusions are well grounded. For instance, only one to three localities are mentioned respectively for such large areas as Alabama, Arkansas, Connecticut, Georgia, Maine, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, New Brunswick, South Carolina, and Tennessee. The whole number of localities is only 120, and in several instances quite a number of them are included within comparatively small areas. This shows how slender is the basis for a

map, covering the whole United States and southern Canada east of the 100th meridian, with sharply defined areas of distribution for "Gray birds *exclusively*," "Gray birds predominate," "Red birds predominate," and "Red birds *exclusively*." These apparently hard-and-fast areas, as seen on the map, are thus to a very high degree obviously hypothetical and untrustworthy, and are alone sufficient to show the unscientific character of the author's methods.

Not only are the facts given exceedingly insufficient, but to some extent needlessly so, since he appears to have made very little use of the literature available on the subject. But what is worse, both his text and his Map II grossly misrepresent the facts in the case, as already on record before his paper was prepared. For instance, Mr. Ridgway has stated (Birds of Ill., p. 417) that in the vicinity of Washington the two phases both occur, "although the rufous style is perhaps the more common," being in "about the same proportion" as obtains "in the neighborhood of Cincinnati," where out of 56 specimens reported on by Dr. Langdon, "32 were rufous and 24 were gray." Yet only red Owls are given in Mr. Hasbrouck's table of localities as occurring about Washington. Also no red birds are reported from Florida, and the map shows that the region of "Gray birds exclusively" includes all of Florida except its extreme northeastern portion. We have, however, seen a number of red birds from the Indian River region and southward, and Mr. W. E. D. Scott informs us that in various parts of south Florida visited by him the two phases were in nearly equal proportions, and that near Fort Thompson he found the red prevailing almost to the exclusion of the gray. Mr. C. J. Maynard, after a long experience in southern Florida, says (Birds of East. N. Am., p. 271) "both plumages are found equally common, both North and South," and that he has "found all the stages [red, gray and intermediates] as common there [Florida] as in Massachusetts." Furthermore, the type specimen of the Florida Screech Owl (subsp. *floridanus*) was a *red* bird from the Indian River! (*Cf.* Ridgway, Bull. Essex Inst., V, p. 200, and N. Am. Bds., III, p. 52.) It may also be added that Mr. Wayne, in the present number of 'The Auk' (p. 337) in a paper on the 'Birds of the Suwanee River,' says of the Florida Screech Owl: "Resident. All I examined were in the red phase."

Whatever basis Mr. Hasbrouck may have had for giving only gray birds from northern New England, northern New York, and the eastern Provinces of Canada, only *three* localities are cited by him for the whole area of Nova Scotia, New Brunswick and Maine combined, and the two from New Hampshire are both near the southern border of the State. Feeling sure of the frequent occurrence of the red phase of the Screech Owl in northern New England, we addressed a letter of inquiry on the subject to Mr. A. H. Verrill of New Haven, Conn., son of Prof. A. E. Verrill, the eminent zoölogist, formerly of Oxford County, Maine, and have received the following: "In reply to your question as to whether my father ever found the red phase of the Screech Owl in Maine, he says that he has

taken it there, but it is much rarer than the gray. I have taken both phases in New Hampshire and Vermont, but found the *red* the commoner in the White Mountains, and the *gray* the commoner in Vermont. In the vicinity of New Haven the gray phase outnumbers the red by about two to one, that is, so far as my experience goes, and I have about 50 specimens brought to me each year to be stuffed." Further comment on this part of the subject is unnecessary. The foregoing sufficiently shows the untrustworthy character of the author's generalizations respecting areas of "exclusively *gray*" birds

His methods are further illustrated in his tables showing the color of the young in relation to the color of their parents. From these tables he says, "It will be readily seen that red birds breed either all red, all gray, or both; that reds and grays breed either all red, all gray, or both; while gray birds, as previously stated, *invariably breed true*," or always produce gray birds. This last statement is not improbable, perhaps, but 'highly important if true.' So we naturally enquire as to the evidence, and find it based on apparently *six observations*. Turning to the next table, of 'Young produced by Red Parents,' out of 19 cases we find red birds produced "all gray" young in two instances, "all red" in eight cases, and mixed progeny in nine cases. In the third table of 'Young of Gray and Red Parents,' in 12 cases three gave all gray young, four all red, and five mixed broods. On this evidence the author claims that "the grays breed true even in a region where red is the predominating color, *and where the individuals in question may themselves be the offspring of red parents*," and that "gray birds *never* produce red." On this basis it is claimed that the gray birds are "the ancestral stock, and that the producing of gray birds by red parents is a tendency to revert to ancestral characters"; that the red bird is being gradually evolved as a subspecies from the gray bird, and will in time have a distinct and exclusive habitat of its own. While these facts may point to his conclusions, they seem hardly to satisfactorily establish the assumption that "gray birds *never* produce red."

The "four distinct causes" operating to produce all this are: (1) Humidity; (2) Temperature; (3) Acquired characters; (4) Forest areas. Curiously enough, he seeks to correlate the distribution of gray birds with regions of greatest humidity, forgetting apparently that over all the more arid parts of the continent all the birds of the *Megascops asio* group are gray! Again, curiously, he considers the red phase the light-colored type and the gray phase the dark-colored form. Yet with all this he has to confess that the distribution of the several color phases, even as he gives it, fails to conform to the distribution of humidity, or even to the pine forest areas, with which he thinks the habitat of the gray phase ought to agree.

In treating of the influence of temperature he singularly misquotes Verrill and Allen as stating that temperature is the "most potent of all influences in the distribution of color," a statement they not only never made, but in all probability never dreamed of making. If Mr. Hasbrouck will make the slight change of substituting the word *species* for the word

color he will correctly state what they did say. Yet his whole argument on the temperature question hinges on this misstatement.

Under 'Influence of acquired Characters,' his 'Table showing relation of color and sex' has obviously no relevancy, at least in the generalized form in which it is presented. Under 'Influence of Forest Areas' an attempt is made to show "why the gray form is not fitted for those regions in which the red is now so greatly in the majority," but the most we get is a statement that there is a partial coincidence between the distribution of the color phases of the Screech Owl with that respectively of the deciduous and coniferous forests. The main point brought forward is that "coniferous forests in the eastern part of the United States have a grayish cast," and that "where the general aspect of the forest growth is gray, gray birds are found." But that there is not a very close agreement between the distribution of coniferous forests and gray birds even our author has to lament: yet this it seems is fortunately but a slight misfortune for the theory, for if the agreement is not close it ought to be, and possibly in time will be. In fact, so crude and unphilosophical are the author's processes that it is almost difficult to treat his struggle with the Screech Owl question seriously. If he had limited his paper mainly to the presentation of his facts on the distribution of the color phases, which are valuable so far as they go, and had been content to plot them on the map by means of symbols, thus showing just how much they were worth and nothing more, he would have produced a creditable paper and saved lumbering up the literature of ornithology with matter not only practically worthless, but, what is worse, absolutely misleading to those who accept it for what it purports to present; and particularly is this true of his 'Map II.' It is in fact its pernicious and misleading features, masked under headlines and embellished with tables and maps of seemingly scientific character, coupled with the fact of its appearance in a reputable scientific journal, that have called down upon it so extended a notice in the present connection.—J. A. A.

Cook's 'Birds of Michigan.'—Professor Cook has done good service to the cause of ornithology through the publication of his 'Birds of Michigan,'[1] prepared and published under the auspices of the Michigan State Board of Agriculture. It is compiled partly from previously published lists, partly from "the valuable manuscripts of the late Dr. H. A. Atkins," and partly from his own observations and those of his students and numerous local observers throughout the State. It appears also that a rough draft of the list was submitted to various prominent ornithologists for revision and comment, with the result of giving by far the most complete and trustworthy list of the birds of Michigan that has thus far appeared.

The list was compiled to meet an urgent need of a carefully prepared catalogue of the birds of the State which should not only give a list of the

[1] Birds of Michigan. Illustrated. By A. J. Cook. Michigan Agricultural Experiment Station, State Agricultural College, Zoölogical Department, Bulletin 94, April, 1893.—8vo., pp. 148, with numerous cuts in the text.

species but also notes on their food and nesting habits, with special reference to "the economic importance of the various species." This 'Bulletin,' like the others of the Michigan Agricultural Experiment Station, is distributed "free to all newspapers in the State, and to such individuals interested in farming as may request it." It is thus intended to be educational in a broad sense. While, unlike several other recent State publications on ornithology, it does not attempt to give descriptions of the species, it contains numerous excellent illustrations of prominent types of most of the leading groups, taken (with permission of the publishers) from Dr. Coues's well-known 'Key to North American Birds.' While perhaps scarcely a model in point of literary execution, it contains a vast amount of information especially valuable to the people of Michigan, and much that is of interest to ornithologists at large, particularly as regards the distribution of a large number of species within the State.

The number of species attributed to the State is 332, but of these a number are admitted provisionally, and with expressions of doubt as to their actual occurrence. The list is thus not a hard-and-fast list of birds strictly known to have been taken in the State, but includes a number of improbable records, as notably the six species of Alcidæ. It would have been better to have excluded all such from the main list and to have made of them a separate, tentative list. Yet, as the alleged evidence is always given 'for what it may be worth,' the real facts in the case are apparent. In the 'Introduction' 21 other species are mentioned as having been recorded from Michigan, but upon unsatisfactory evidence. Yet several of them are as likely to occur as stragglers as are a number of the doubtful ones which are retained and formally enumerated as a part of the list.

In the quite extended annotations there is often much reiteration, and not unfrequently statements by different authorities that are directly contradictory, which must be the source of some bewilderment to the inexperienced student.

The list proper is preceded by a transcript of all the Michigan game laws relating to birds, and by a very full bibliography of Michigan ornithology, the latter alone occupying 14 closely printed pages; there is also a full index giving both the vernacular and technical names. As already said, the work is well adapted for the chief end in view, and is besides a welcome contribution to the literature of North American ornithology.—J. A. A.

Averill's List of the Birds of Bridgeport, Conn.[1]—Mr. Averill's List is "intended to include all species of birds known to occur in a wild state within ten miles of Bridgeport." Many species are admitted from Linsley's well-known 'Catalogue of the Birds of Connecticut,' as recorded from

[1]List of Birds | found in the vicinity of | Bridgeport, Connecticut. | — | Prepared for the | Bridgeport Scientific Society | by | C. K. Averill, Jr. | — | January, 1892. | — | Bridgeport, Conn.: | Buckingham & Brewer, Printers. | 1892.—8vo., pp. 19.

Stratford, and several others are taken from Dr. Merriam's 'Review of the Birds of Connecticut,' on the basis of their known occurrence at Milford. In the main, however, the List is based on the author's own observations, and those of a few fellow-observers, whose names are given in the List. The writer says that "no species has been admitted on unreliable evidence," and a careful examination of the List indicates that it has been prepared with excellent judgment and great care. The number of species recorded as actually known to occur in the immediate vicinity of Bridgeport is 246, all of which are briefly annotated, explicit data being given for the more notable rarities.—J. A. A.

Summer Birds of Greene County, Pa.—Mr. J. Warren Jacobs has just issued a carefully annotated list[1] of the summer birds of Greene Co., Pa. The list gives about 90 species as breeding in the county, and several others are mentioned as found there during the breeding season. The author says he has "aimed to give a correct list of birds found during the breeding season, and to describe, briefly, the localities frequented by the birds, and to state, where sufficient data has been gathered, the nesting date and the number of eggs composing the complement." Greene County, Pennsylvania, is situated in the extreme southwestern corner of the State, and includes an area of about 600 square miles, the elevation nowhere much exceeding 1200 feet. The list thus relates to a region of which we previously knew little except inferentially, and being restricted to the breeding season, gives most important information respecting the character of its fauna. A similar list for almost any locality south of the latitude of the Ohio and Potomac Rivers, and east of the Plains, would be a most welcome addition to our knowledge of the breeding ranges of many species of our birds, and form a valuable contribution to faunal literature.—J. A. A.

Nutting's Zoölogical Explorations on the Lower Saskatchewan River.[2]—Mr. Nutting's 'Report' of nearly 60 pages records the results of two months' work, in July and August, 1891, by himself and Messrs. Frank Russel and A. G. Smith, on the Lower Saskatchewan River. Although general collections were made, mammals and birds received particular attention, 38 pages of the 'Report' being devoted to birds (pp. 247–286). Besides an annotated list of 104 species,—all taken between July 6 and August 25, and hence assumed to be "summer residents,"—several pages are devoted to a discussion of the cause of migration, and several

[1] Summer Birds | of | Greene County, | Pennsylvania. | By | J. Warren Jacobs, | Waynesburg, Pa. | — | Waynesburg, Pa., | — | Republican Book and Job Office. | — | 1893.—8vo., 15 pp.

[2] Report on Zoölogical Explorations on the Lower Saskatchewan River. By C. C. Nutting. Bull. Labratories of Natural History of the State University of Iowa, Vol. II, No. 3, Jan. 1893, pp. 235–293.

more to a tabular list of the species observed with reference to their distribution over other parts of the continent. In seeking a cause other than "instinct" for the migratory movement in birds the author holds that the impulse to migrate "comes in the shape of a stimulus *from without* and the act is a *conscious* seeking for a more suitable clime, on the part of the adults at least, the young simply following or imitating their elders." He adds: "There is much to indicate that this stimulus comes in the form of *wind*"; a warm southerly wind in spring will bring the birds north, and a "cold windy night in the fall will bring the birds south," etc.

A perusal of the list renders it evident that not all of the 104 species observed were strictly "summer residents," but that among them are many more properly to be classed as early fall migrants, the field of observation not being reached till the breeding season of many species was nearly over, and but little before the early migrants normally begin to move more or less southward. Unfortunately the dates of the actual capture of specimens are rarely given, nor are even the localities definitely indicated. The list, however, abounds with many interesting observations.—J. A. A.

A New List of Chilian Birds.[1]—The present list, compiled by the late Mr. H. B. James after a long residence in Chili, "contains only what the authors believe to be species that have been positively identified as occurring in Chili, and omits all those that are doubtful, or that have been erroneously introduced into previous lists. It includes in its scope all Chili, from the newly-acquired Province of Tarapacá on the north to Chiloe on the south, but not the territory of Magellan." The list is mainly a nominal one, consisting of the technical names, and the vernacular when known, with abbreviations indicating whether the species is a permanent resident or merely a winter, summer, or occasional visitor, as the case may be. Those occurring only in Tarapacá, or on the Islands of Juan Fernandez and Masafuera have these localities appended. The total number of species given is 255, a number surprisingly small considering the extent and character of the country.

Dr. Sclater gives in his preface a short biographical sketch of the author, from which it appears that Dr. Sclater and Mr. James had formed a plan to prepare jointly a work on the Birds of Chili as a sort of companion volume to that on 'Argentine Ornithology,' by Sclater and Hudson. It is greatly to be regretted that the death of Mr. James on the 22d of July, 1892, is likely to prevent the consummation of so desirable a scheme.—J. A. A.

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[1] A New List | of | Chilian Birds | compiled by the late | Harry Berkeley James, F. L. S., F. Z. S., F. R. G. S. With a Preface | by | P. L. Sclater, M. A., Ph. D., F. R. S. | — | Printed for Private Use. | — | London: | Printed by Taylor and Francis, | Red Lion Court, Fleet Street. | 1892. | Roy. 8vo, pp. viii, 16.

Berlepsch and Peters on Birds from Curaçao.[1]—Having received a number of birds collected on Curaçao by Herr Peters, Graf von Berlepsch has made this collection the basis for an extended review of the relationships of the birds of this island. A synopsis of the previously existing literature referring to the avifauna of the island is followed by analyses of the birds found there, which show their continental and West Indian affinities. In explanation of the singular distribution of *Conurus pertinax*, found only on Curaçao and St. Thomas, it is suggested that the bird may have been introduced on the latter island, a not unreasonable supposition.

The nineteen species given from the island are very fully annotated. *Cœreba uropygialis*, *Buteo albicaudatus colonus*, and *Falco sparverius brevipennis* are descibed as new. The list is concluded by a synoptical table which readily shows the distribution and relationships of Curaçaon birds.

Herr Peter's field-notes refer to fifty-one species of which only eighteen are represented in the collection.—F. M. C.

Hartert on Birds from Aruba, Bonaire and Curaçao.[2]—A revolution having prevented Mr. Hartert from visiting Venezuela, as he proposed doing on his recent trip to South America, he turned his attention to the small islands of Aruba, Bonaire, and Curaçao off the Venezuelan coast. The restricted fauna of these islands is of course less attractive to the collector than the rich life of the mainland forests, which is doubtless the reason, as Mr. Hartert states, for their comparative neglect by naturalists. We may be thankful, therefore, that they have at last been thoroughly explored by an experienced collector. The results of this exploration have in part been announced in the Bulletin of the British Ornithologists' Club for 1892 and 1893, where *Euethia sharpei*, *Myiarchus brevipennis*, *Conurus arubensis*, and *Amazona rothschildi*, all slightly differentiated insular forms, were described. To these *Columbigallina passerina perpallida* is now added, and a plate of *A. rothschildi* is given.

Aruba, sixteen miles from Cape San Roman, is the nearest of the three islands to the continent. Mr. Hartert gives a list of twenty two land-birds and eighteen water-birds as a result of his observations in this island. *Amazona canifrons* (Lawr.) from Aruba is considered to have been based on an example of *A. ochroptera* (Gm.) "with a dirty forehead." A plate is given of the latter species. Mr. Hartert states that in *Icterus xanthornus curasaoensis* the black tail is assumed "by changing colour, not by moult, as two of my specimens clearly show." It is to be regretted

[1] Die Vögel der Insel Curaçao nach einer von Herrn Cand. theol. Ernst Peters daselbst angeleten Sammlung bearbeitet von Hans von Berlepsch. Journ. für Orn., January, 1892, pp. 61-104. Die Vögel Curaçaos. Nach meinen Journalnotizen vom 21. August bis 5. Sept. 1890. Von Ernst Peters Th. C. *Ibid.*, pp. 104-122.

[2] On the Birds of the Islands of Aruba, Curaçao, and Bonaire. By Ernst Hartert. Ibis, July, 1893, pp. 289-338, pll. viii, ix.

that he did not describe these two specimens which "clearly show" what large series of specimens of allied species have previously failed to prove.

From Curaçao Mr. Hartert records twenty-eight species of land-birds and eleven of water-birds, being all that have been identified with certainty from this island.

The relationships of the *Euethia bicolor* group are here discussed at length, and four forms are recognized,—*bicolor*, from the Bahamas and Lesser Antilles; *marchi* from Jamaica, San Domingo and Barbados [?]; *sharpei* from Aruba, Curaçao, and Bonaire, and *ommisa* from Colombia, Venezuela, and Tobago.

Bonaire, the third island to be visited by Mr. Hartert, is described as the "most oceanic of the three" and "generally more wooded than the other three." Twenty-three species of land-birds and fifteen species of water-birds were found on this island. The occurrence here of the West Indian *Margarops fuscatus* and *Ammodramus savannarum* is among the most interesting of Mr. Hartert's discoveries.

He concludes by calling attention to the "striking affinities between the avifauna of these islands and that of the islands of St. Thomas and St. Croix (Virgin Islands), but no similarity to that of the Windward Islands." These facts, Mr. Hartert thinks, "seem to point to the theory that the Virgin Islands and the Islands of Bonaire and Curaçao were formerly connected in some way, or that they are of the same geological age, and not of the same age as the Windward Islands." He adds: "Perhaps there was once a line of islands (similar to that of the Lesser Antilles) reaching from St. Thomas through 'Los Aves,' or the Bird Island, by way of Blanca, Orchilla, Grand Cay, Los Roques, and the second group called 'Los Aves,' to Bonaire and Curaçao." It seems to us, however, that the facts of the case are too unimportant to justify Mr. Hartert's reckless island-building in the great depths of the Caribbean Basin. The islands off the Venezuelan coast are oceanic and their avifauna like that of most oceanic islands is in part due to purely fortuitous circumstances. Accidental visitors which would stand little chance of surviving in more thickly populated regions here find an isolation favorable to their existence. Their presence is thus not necessarily to be accounted for by actual geographical connection with the habitat of their nearest allies. Again similar causes may produce similar results. The Bahaman *Geothlypis* finds its nearest relative in the Lower Californian species, but there is no reason to doubt that it was derived from the Florida form from which it has changed in the direction of the western species. Most of the West Indian species occurring on Aruba, Bonaire, and Curaçao are found as slightly differentiated races in the Windward Islands, and it is quite possible that some of them have been derived from this source and subsequently have become changed to forms more closely resembling those found in the Virgin Islands.

Furthermore, as oceanic islands of apparently great age (Mr. Hartert suggests that they may be older than the Windward Islands), it is not

improbable that these small islands, like the West Indies themselves, should now have species resident upon them which were originally derived from the mainland where they have since yielded to the continental struggle for existence and given place to better adapted forms. *Margarops* on Bonaire is a case in point; *Spindalis* on Cozumel is perhaps a similar instance.—F. M. C.

Newton's Dictionary of Birds, Part I.[1]—The scope of this highly useful and important work is thus defined by its principal author: "Those who may look into this book are warned that they will not find a complete treatise on Ornithology, any more than an attempt to include in it all the names under which birds, even the commonest, are known. Taking as its foundation a series of articles contributed to the ninth edition of the 'Encyclopædia Britannica,' I have tried, first, to modify them into something like continuity, so far as an alphabetical arrangement will admit; and, next, to supplement them by the intercalation of a much greater number, be they short or long, to serve the same end. . . . In the difficult task of choosing subjects for additional articles, one of my main objects has been to supply information which I know, from enquiries often made of me, to be greatly needed." The selection of names to be inserted, says the author, has been quite arbitrary, such compound names as Crow-Shrike, Crow-Titmouse, Shrike-Crow, Titmouse-Thrush, and the like, having been excluded, as well as "a vast number of local names of even British Birds," while such names as Caracara, Koel, Mollymawk, Tomfool, etc., which occur more or less frequently in books of all sorts, but especially in works of travel, are included. Those of course who are familiar with the character of the ornithological matter in the 'Encyclopædia Britannica' need not be told that the work is not made up simply of bird names and their definitions, but includes the whole range of ornithology, embracing the anatomy of birds, their classification, their geographical distribution and much purely biographical matter, as will be noted later.

In respect to the authorship of the work, we are told that the anatomical portions are mainly contributed by Dr. Gadow, and that they bring, in the opinion of the principal author, "the anatomical portion to a level hitherto unattained in any book that has appeared." "For other contributions of not less value," says Professor Newton, "I have to thank my old pupil Mr. Lydekker, my learned colleague Professor Roy, and my esteemed correspondent Dr. Shufeldt, formerly of the United States Army."

[1] A Dictionary of Birds. By Alfred Newton. Assisted by Hans Gadow. With Contributions from Richard Lydekker, M. A., F. G. S., Charles S. Roy, M. A., F. R. S., and Robert W. Shufeldt, M. D., late United States Army. Part I (A–Ga). London, Adam and Charles Black, 1893. 8vo., pp. viii, 304, map, and numerous illustrations in the text.

In regard to the arrangement and character of the matter, it may be noted that the higher groups, as orders and suborders, are treated formally but briefly in their alphabetical sequence, but we look in vain for a similar treatment of genera or even families, at least under their technical names, such groups being generally entered under their English names, although there are some exceptions, as in the case of *Chamæa*, *Cereopsis*, etc. Thus while we find Amazon, Ani, and Bittern, we look in vain for *Chrysotis*, *Crotophaga*, and *Botaurus*. In respect to English names, we have something about their origin, etymology, and cognate equivalents in other modern languages, with usually some account of the bird or birds to which the name is applied, varying in extent from a few lines to several pages. Thus under *Accentor* we have three lines, stating that the name was used by Bechstein for a genus of Sylviidæ, and that "some British authors have tried with small success to add [the name] to the English language"; while some three pages are given to *Albatross*, nearly two each to *Avocet*, *Bittern*, three to *Crane*, six to *Dodo*, etc., usually with one or more cuts under each. Under *Bob-white*, we are told that it is "a nickname of the Virginia Quail, *Ortyx virginianus*, aptly bestowed from the call-note of the cock," with no hint that the name has been adopted of late as the regular 'book-name' for not only this species but all its congeners by American writers generally. In respect to this phase of the work, the exacting critic might discover much to find fault with, even from the supposed standpoint of the author, but we should perhaps rather be thankful that so much useful and pertinent information has been selected for presentation from a field so wide and inviting that the difficulty is to keep the matter within reasonable limits.

The anatomical side of the subject is treated with much fullness, and for the most part satisfactorily, so far as the limits of the volume will permit. It is to be noted, however, that Dr. Gadow's complete belief in the great efficacy of 'sexual selection' as an agent in evolution is manifested without reserve or check, as shown especially in his article on *Colour*, where he says: "Natural and sexual selection, whether combining or striving against each other, have worked marvels in plumage. Significant colours, as for instance total blackness or whiteness, could be developed only when higher intellectual qualities, bodily size and strength, or occasionally even special smallness, guaranteed the safety of the bird." With such elasticity in premises, it is little wonder that explanations seem easy, although we have white and black birds of all orders and of all sizes, and living amid the most diverse surroundings. He observes further that "The very early assumption of the black plumage by the nestlings of Ravens and Crows is a strong argument for their relatively highest position on the hypothetical avine tree." It would be interesting to know what evidence Dr. Gadow can advance for the intellectual superiority of Crows and Ravens over Magpies and Jays.

The article on color is, however, a most useful one, as it gives in a condensed and intelligible form a general summary of our present knowledge of the subject, including the nature and kinds of color pigments, 'objec-

tive structural' colors, and 'subjective structural,' prismatic, or metallic colors. Respecting the distribution of coloring matter he says: "To judge from the growth of a feather, the production of crossbars seems to be the older stage, since they will result from the intermittent deposition of pigment, while, on the other hand, the production of shaft-streaks is not yet satisfactorily explained. At any rate, it must be borne in mind that possibly various groups of birds have gone independently through such stages, and that what is primitive or archaic in one need not be so in all."

It seems strange not to find under *Dimorphism* some reference to the familiar phenomenon of dichromatism as exemplified in numerous genera of Owls, Hawks, Goatsuckers, Herons, etc., some of which seemingly should have come to his mind in this connection rather than the far-fetched cases he does cite. In fact, it would seem only fair to expect that a subject of so much importance and interest as dichromatism would at least receive mention, if not be made even the subject of a short article.

Among other subjects treated at considerable length are *Eggs*, by Newton, forming an article of 10 pages; *Embryology*, by Gadow, 18 pages; *Extermination*, by Newton, 12 pages; *Feathers*, by Gadow, 10 pages; *Flight*, by Prof. Roy, 12 pages; *Fossil Birds*, by Lydekker, 8 pages. These are all articles of the highest interest and importance, though that on Flight is somewhat disappointing, both in method of treatment and results. For instance, the relation of flight to the form of the wing is given much less consideration than its importance merits; and there is a tendency to treat the subject, and particularly soaring, from the standpoint of the physicist and the mathematician. The fact seems to be ignored that a bird is not a dead weight—a piece of card board, or a lump of dead matter—but a living, sensitive, highly endowed animal.—a living kite, to employ a simile, in which the attraction of gravitation represents the kite-string, while the soaring bird, representing the kite as a whole, under the direction of its keen senses, is constantly, automatically perhaps or at least almost unconsciously, trimming its sails—its wings and tail—to secure its desired course or position. Any one who has observed birds soaring under a variety of circumstances need not be told that while "upward currents of air" and "varying velocity of wind at different altitudes" may be necessary for soaring in the opinion of the physicist, birds themselves are not thus restricted, at least to any essential degree. A certain amount of momentum must evidently be acquired, after which birds seem able to soar at pleasure in either a practically calm atmosphere or in a gale of wind; within a few yards of the surface of the earth or at altitudes almost beyond the reach of the vision. A slight, even almost imperceptible movement of a wing or inclination of the tail may suffice to place the bird in the proper plane to receive a new impetus or enable it to radically change the direction of flight.

Much of the 'Dictionary,' as already explained, is matter republished with little change from the 'Encyclopædia Britannica,' but there is a great deal that has been expressly written for the present work. The illustra-

tions are a prominent and useful feature, and include a very large number of excellent wood-cuts, from Swainson's 'Classification of Birds,'—figures, which for "truth of detail and beauty of design have seldom been equalled and rarely surpassed."—J. A. A.

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GENERAL NOTES.

Capture of the Black-capped Petrel Inland in Virginia.—The little town of Blacksburg, in Montgomery County, Virginia, beyond the Blue Ridge, and about 2150 feet above the sea, is distant from the coast about two hundred miles. Yet here, on August 30, 1893, two days after the great cyclone, I obtained a bird, the capture of which would be well worthy of note if made anywhere on the coast of the United States. A negro brought me, confined alive in a shoe box, a bird which he had captured on a small fish pond that day; the bird could scarcely fly, and he had caught it by hand. I recognized it as one of the Procellariidæ, but its large size and stout, strongly hooked beak brought to my mind only vague visions of

Daption. Dr. Coues's 'Key,' backed by Ridgway's 'Manual,' soon settled its identity beyond question, and now henceforth the Black-capped Petrel, *Æstrelata hasitata* (Kuhl), ranks as a Virginia bird, although an estray.

The measurements were as follows: extent, 39⅜ inches; length, 15½; wing, 11¾; tail, 5 1⁵⁄₁₆; gradation of tail, about 1.75. Further measurements or description were simply to repeat Coues or Ridgway. The beak was as represented by Ridgway, only the nostril tube was nearly straight, and not so convex as shown by that author. Tongue and inside of mouth, of a fine purplish cast. The stomach was empty, save for slime which was evidently secretion, as it showed no organic structure on microscopic examination. The skin was totally devoid of the usual sea-bird fat, and the whole bird was remarkably lean. The patella showed the same remarkable spiny development which I have noticed in *Puffinus audubonii*. The moult was almost complete, the first and second primaries in each wing being still old and worn feathers. Unfortunately the bird died before I could photograph it alive, and the accompanying photographs[1] were taken from the bird 'in the meat,' just before skinning it. I also made careful drawings of beak, humero-coracoidal, and tibio-femoral joints.

Considering the species, I believe this to be a remarkable occurrence of a 'sea-stray' inland, and it goes to show something of the character of the cyclone of 1893.—Ellison A. Smyth, Jr., *Blacksburg, Va.*

Fregata aquila in California.—A Man-o'-war Bird was shot at North Pasadena in 1892, by a man named Lincoln Price. The specimen was mounted by Mr. W. H. Wakeley of Pasadena. Mr. Price tells me he shot it about sunset on a fair day about a year ago [*i. e.*, about August, 1892]. The bird was circling about rather low; and once seemed inclined to alight on a gum tree, but did not. The bird is an immature one. It is now in a Los Angeles drug store. This record is interesting for this State, for it seems that the only previous well authenticated record for California was from Humboldt Bay, October 5, 1888 (see Anthony in Proc. Cal. Acad. Sc., Vol. 2, p. 88).—R. H. Lawrence, *Duarte, Cala.*

The Cinnamon Teal (*Anas cyanoptera*) in Florida.—During a visit to Mr. John Krider's old gun store in this city last winter the taxidermist showed me a fine specimen of a male Cinnamon Teal, still in the flesh, which he said had just been received from South Carolina to be mounted. As the gentleman who shot it, Mr. Charles S. Hebard, was likely soon to return from the south I made no further inquiries as to the capture until I could see him personally. As he did not return, however, I secured his address and received the following reply to a request for particulars. Writing under date of Pequaming, Baraga Co., Michigan, Aug. 14, 1893, he says: "I shot the Cinnamon Teal on Lake Iamonia in Florida about five days before it reached Krider's. I cannot give the date but suppose

[1] The photographs, on comparison with a mounted example of *Æstrelata hasitata* from the coast of Florida, show the above identification to be beyond reasonable doubt.—Edd.

they can at Krider's. Mr. Kerr and I were shooting Snipe, and while crossing a bottom with weeds all over it and water about fifteen inches deep, I started this Duck from a small pond. It was alone. When I got to where it fell I was struck by its beauty and decided to have it mounted. The bird is mounted in dead game style." According to Mr. Hebard's calculation the bird was killed on February 18, 1893.

Mr. W. E. D. Scott records in 'The Auk' (Vol. VI, p. 160) specimens of Cinnamon Teal taken at Key West, and Dr. J. A. Allen mentions (Bull. Mus. Comp. Zoöl,, Vol. II, p. 363) on the authority of Mr. Maynard that examples of the same species have been taken on the Indian River.—SAMUEL N. RHOADS, *Philadelphia, Pa.*

An Additional Specimen of the Labrador Duck.—The Academy of Natural Sciences of Philadelphia was recently presented with the natural history collections of the late George W. Carpenter of that city. The collections, which included a great number of mounted birds, were arranged in a separate museum building on the grounds of the Carpenter estate at Mt. Airy near Philadelphia, which forty or fifty years ago was one of the most famous private museums in the State and was visited by Mr. Audubon and other naturalists of note.

Upon examining the birds contained in the collection in May of the present year, preparatory to having them removed to the Academy, I was delighted to discover an adult male of the Labrador Duck (*Camptolaimus labradorius*) in a very good state of preservation. The bird was unfortunately without any label except a number referring to a catalogue which had been lost some years ago, and I was unable to obtain any information whatever concerning its capture.

This specimen (No. 30,245, coll. A. N. S. Phila.) is evidently additional to those enumerated in Mr. Dutcher's recent paper (Auk, VIII, p. 201), and together with the specimen recorded in 'The Auk' for October, 1892, (IX, 389) brings the whole number of known specimens up to forty.

The Philadelphia Academy has now a very fair representation of this species, as it previously possessed a female and two young males.—WITMER STONE, *Philadelphia, Pa.*

Capture of Another Ardetta neoxena at Toronto, Ontario.—On May 20, 1893, a female *Ardetta neoxena* was shot at Toronto Marsh by a fisherman, named J. Ramsden, and was brought to Mr. Oliver Spanner, taxidermist, who bought the bird. Mr. Spanner has it mounted, and has furnished me with the following measurements: length, 13½ inches; wing 4½ inches; and informs me that it is a female.

This is the second specimen taken at Toronto, and makes the eighth specimen known in collections, the other six having been collected in Florida, where its range appears to be very much restricted. The first specimen taken at Toronto was shot on May 18, 1891, and is recorded by Mr. William Cross in the third issue of the 'Proceedings of the Ornithological Subsection of the Canadian Institute,' for 1890–91, page 41. This

specimen was sent to Mr. Ridgway for examination, and was identified by him. The bird is at present mounted and in the collection of the Canadian Institute, Toronto.

In noting that the two birds were shot at almost exactly the same date in each year, it would appear that their habits of migrating are very regular, and that the absence of records for other years might be due to their great rarity and their retiring habits, for they certainly are very rare visitants, and possibly, as Mr. Cross says, "have wandered up here with our *Ardetta exilis*." A probably parallel case is that of the capture of an Audubon's Caracara (*Polyborus cheriway*), on the north shore of Lake Superior, not far from Port Arthur, on July 18, 1892, reported by Mr. George E. Atkinson, to the Natural History Society of Ontario; and another similar case is the taking of a Purple Gallinule (*Ionornis martinica*) near Toronto on April 8, 1892, reported by Dr. Brodie.

On comparing the two Toronto specimens of Cory's Bittern, the markings are identical, except that in the bird of 1893 there is a patch of white feathers on each leg, which is entirely wanting in the other, and that the dark under parts of the body proper in the 1893 bird are mixed with dark chestnut, while in the other this is almost entirely wanting. Dr. Coues's description agrees with each bird, excepting in the above particulars.— HUBERT H. BROWN, *Toronto, Ontario.*

[Mr. Brown has been kind enough to send me the bird above referred to for examination. On comparing it with four specimens in my collection from Florida, I find that it agrees very closely with a skin taken at Lake Flirt by Capt. Menge and referred to by Mr. Scott (Auk, IX, 1892, p. 142) under the catalogue number "11,451." The Toronto bird is a trifle the darker on the back, and the chestnut of its under parts is slightly richer, but in other respects the two specimens are almost exactly alike.— WILLIAM BREWSTER.]

Another Megascops flammeolus for Colorado.— In referring to Mr. Edwin M. Hasbrouck's article in the July 'Auk,' on 'The Geographical Distribution of the Genus *Megascops* in North America' I may say that I have a specimen of *Megascops flammeolus* which was shot July 17, 1884, in Bear Creek Cañon, near Evergreen P. O., Jefferson Co., Colorado. This swells the total of known records for the United States to seventeen, of which twelve are from Colorado.— HORACE G. SMITH, *Denver, Colo.*

The Road-runner in Kansas.— In August, 1892, Mrs. M. L. Smith noticed a strange bird about her home in Comanche County, this State. The bird was seen "every day or so," but it could not be caught. Finally, during a heavy snowstorm at Christmas time, the bird, which proves to be a Road-runner (*Geococcyx californianus*), was caught by a son of Mrs. Smith. The bird was kept in a large cage until the snow was gone and was then set at liberty. It remained about the premises, however, and "would come into the house," or would sit on a window-sill and receive its "rations," which were regularly given it until spring. The rations

comprised "fresh meat, mice, and boiled egg." In the spring (1893) "it commenced cooing, and sometimes would be gone over night. It roosted in a large outbuilding, and "for fear of losing it," writes Mrs. Smith, "we put a screen to the door and have it confined now" (May 23, 1893).

Col. N. S. Goss in his 'Revised Catalogue of the Birds of Kansas' (1886) states that two Road-runners were seen in 1884 near the western line of the State, and says: "I feel confident that they occasionally breed in the southwestern corner of the State, a natural habitat for the birds." The occurrence here noted is the only one, excepting the one referred to by Col. Goss, which has been so far recorded for Kansas.— VERNON L. KELLOGG, *Lawrence, Kansas.*

Two Corrections.— In an article which appeared in the July number of 'The Auk' I described at some length a peculiar process of regurgitation employed by the Flicker in feeding its young, believing — and indeed remarking at the time—that the habit was unknown or at least unrecorded. It seems, however, that it had been previously observed by Mrs. Olive Thorne Miller who published an account of it in 1890 in the 'Atlantic Monthly,' the article being afterwards (in 1892) republished in a collection of essays entitled 'Little Brothers of the Air.'

It is a pity that writers like Mrs. Miller—gifted with rare powers of observation and blessed with abundant opportunities for exercising them —cannot be induced to record at least the more important of their discoveries in some accredited scientific journal, instead of scattering them broadcast over the pages of popular magazines or newspapers, or ambushing them in books with titles such as that just quoted. But an opportunity for delivering a properly frank and telling homily on this sad evil is unfortunately denied me on the present occasion, for some one of these writers might be unkind enough to point the moral of a second admission which I am about to make, viz., that my announcement, in the last number of 'The Auk,' of the capture in Georgia, by Mr. Worthington, of two specimens of the Ipswich Sparrow, proves to have been anticipated in a previous issue (Vol. VII, April, 1890, pp. 211, 212) of *the same journal.* It is needless to say that this fact had quite escaped my memory—as it had also, apparently, that of our usually vigilant editors—and I was further thrown off my guard by Mr. Worthington's statement that, as far as he was aware, his birds had never been reported. This assurance—unquestionably given in good faith—affords a striking as well as amusing instance of the fallibility of human memory, for the record just cited was made by *Mr. Worthington himself.*— WILLIAM BREWSTER, *Cambridge, Mass.*

The Number of Ribs in Cypseloides. — The occurrence of a rudimentary seventh pair of ribs is so common among Swifts that I have long been looking for a species in which the normal number of ribs should be seven pairs. Apparently this looked-for species has at last been found in the western Cloud Swift (*Cypseloides niger*), for four specimens of this bird recently

examined have each seven pairs of ribs, and it seems hardly probable that these specimens, collected at different times and localities, should all be abnormal. The peculiar interest attached to the possession of seven pairs of ribs by a Swift lies in the fact that no known Passerine bird has, normally, more than six pairs of ribs, while such Hummingbirds as have been examined have eight pairs. *Cypseloides* is also peculiar in its skull, as has been pointed out by Dr. Shufeldt, the vomer not being expanded distally as in the other Cypselidæ. The Tree Swifts have a somewhat similar vomer, but these, to my mind, form a separate and well marked family, as set forth in 'The Auk' for January, 1889. — FREDERIC A. LUCAS, *Washington, D. C.*

An Attractive Addition to the Avifauna of the United States.—Icterus gularis yucatanensis von Berlepsch.— MR. E. A. McIlhenny recently sent me for identification a skin of a handsome Oriole which proves to be this subspecies and which he kindly presented to the collection of the United States National Museum here. He shot the bird on June 3, 1893, on Avery's Island, New Iberia Parish, Louisiana, from a flock of four; and he writes me that although these birds were quite tame he only shot the one in hopes that the remaining ones would bring others there. His attention was first called to them by their unfamiliar whistle, which is a soft flute-like note expressed by the word 'whae' about as well as anything; this is repeated from time to time as the birds move from limb to limb in search of food. On disecting the specimen he found a number of small green caterpillars and several spiders, but the principal food seemed to consist of the small purple figs, which were just ripe. While in search of food they move about exactly as the Baltimore Oriole does, swinging from slender twigs head downward, looking under limbs for insects, and moving about continually. He observed the remaining three birds again on June 5 in some fig trees in the plantation garden.

Although this beautiful Oriole may be an irregular, it appears to be sometimes a common summer visitor along the Gulf coast of Louisana, and less frequently perhaps of Mississippi as well, as the following notes will show; and it seems even probable that it breeds occasionally within our borders. Mr. McIlhenny had already obtained a specimen of this Oriole two years previously and sent me the following extracts, relating to its occurrence, copied from his note-book.

"May 17, 1891. John Goffney brought me today a beautiful bird that he killed in the swamp back of the sugarhouse. It is undoubtedly an Oriole, but one I have never seen before. Owing to the poor condition of the plumage, I did not make a skin of it. The markings are: head, breast, under and upper tail-coverts, orange; wings black with orange markings at their base; back black from base of neck to upper tail-coverts. It is a male, and much larger than the Baltimore Oriole. On dissection the only food found was a few insects and three small caterpillars.

"August 3, 1892. Today I went out to Mr. Herters's rice field to try and get some of the birds I hear feed there. I met J. Mason and induced him

to go with me. We arrived there quite early and saw a flock of about twenty of the birds I was after; they were feeding on the rice in company with Bobolinks and Red-winged Blackbirds. We found them very wild and it was impossible to get a shot. The men who mind the rice told me they sometimes killed a few and they saw some every year in these fields. I went to the house of a negro who had killed some the day before, to see if I could get any, but found they had all been used for food. I saw, however, the heads, wings and feathers of several specimens and think undoubtedly that the birds are the same as the one brought me by John Goffney on May 17 of last year, that is, it is an Oriole I do not know.

"On showing the specimen killed on June 3, 1893, to Mr. Allen Mehle on the 14th of the same month, he told me that a flock of about two hundred of these birds came to his place at Mississippi City, Miss., in July, 1892, and remained there for some time. Numbers of them were killed and several were sent to a taxidermist in New Orleans, but he did not know his name. He is positive it is the same bird, and as no one knew what they were, he had some mounted."

In his letter of Sept. 12, 1893, Mr. McIlhenny writes me also as follows: "I showed the skin, before I sent it to you, to Captain Jim Hare of the Trinity Shoal lightship, and he told me that two birds of exactly the same appearance had struck the light and had been killed this spring in April. His ship is sixty miles out to sea and due south of here. Capt. Hare tells me that he often sees large flocks of small birds flying high in the air during their migrations."

From the foregoing it will be seen that this Oriole cannot be regarded as simply a straggler, and it is only surprising that it has been overlooked so long.— CHARLES E. BENDIRE, *Washington, D. C.*

Behavior of a Summer Tanager.— I send the following item which my friend, Rev. Boniface Verheyen, of St. Benedict's College, Atchison, Kansas, communicated to me a short time ago.

". . . I want to tell you about the peculiar conduct of a Summer Tanager (*Piranga rubra*) which a number of the professors witnessed daily for several weeks. It was during the last week of May that the bird first began to attract attention. He would be seen to fly from window to window on the north side of the west wing of the College, or perch on the sill, facing inward, as if peering through the window. Every few moments he would make an attack on the pane with his bill, as if he were trying to get at something or force his way through. When driven from one window he would fly to another. His attacks were at times quite vicious: he would fly from a neighboring tree directly for the window and strike the pane with a whack. Time and again he attracted my attention in my room, though the door was shut. Several times I took my stand directly in front of the closed window within a few feet of him and watched him closely at his seeming mad effort to peck holes through the pane. He did not seem to care much whether I stood there or not. I opened one of the windows on several occasions to see if he would come in, but he did

not take kindly to my invitation, for he would give the open window a wide berth. One of the junior professors, M. Stein, of your town, had better success in this particular than I had. He happened along the lower corridor, when he found the bird hammering away at the window. He watched a few moments and opened the window. Without further ado the bird flew through and lighted on the window stool; and what is singular, the bird allowed M. Stein to approach and take him into his hand. The bird was set at liberty soon after. The strange conduct of the bird excited general comment in our end of the house, and as many as six or eight professors watched his pranks at a time. It was quite a sight to watch him, so intent he was in his work, and the feathers of his neck fairly on end with the nervous tension.

"The solution of the bird's strange conduct was found one morning while we were at breakfast, when he was again laying one of his periodic sieges to the windows. From the situation of the dining room in the north wing of the building, the eye sweeps across the open court to the west wing, the north windows of which were the *point d' attraction* for the bird. It was then noticed that the light was reflected from the glass, and objects out in the court were plainly mirrored in the panes and the image of the Tanager was quite well defined. The mirror-like reflection was particularly strong and sharp in those windows from which the storm windows had not yet been removed and where the corridor received light only from one side. Not long after the storm windows were removed, and the windows were left open most of the time, when the bird disappeared, having spent quite an amount of time, for about two weeks, in the manner described above. As you are aware, there are eight maple trees standing in the open court, three of them within twenty-five feet of the windows; to these he would withdraw at intervals, to catch his second wind, as it were, before returning to the charge. I tried to ascertain whether he had a nest in the adjoining trees, but failed to discover one. It is likely though that he is domiciled near by, and that his vicious attacks on his image in the glass were meant for an imaginary foe, who might endanger his little household."

So far my correspondent. I might add that during my sojourn at the college, a Summer Tanager was a constant visitor to the grove on the College Campus, and nested there for a number of years

Here is another little item in connection with bird lore that may be of interest. On one of my visits to the college, three years ago, I was informed that a certain bird had often been seen in the students' chapel. As the chapel is skirted on two sides by trees, and the windows are usually open during the summer, it is not a rare occurrence to find a stray bird fluttering about on the inside. But here was said to be a case of a frequent visitor to the sacred enclosure — a bird with a religious turn of mind, so to speak. I examinied into the matter, and, sure enough, there was my bird, a female Yellow-billed Cuckoo (*Coccyzus americanus*). She was not flying about, but stood on the floor, on which she had laid an egg, and to all appearances was standing guard over it. I secured the egg, which is now preserved in the college museum.— PIRMINE M. KOUMLY, *Seneca, Kansas.*

Breeding of the Rough-winged Swallow at Shelter Island, New York.— While collecting with Mr. W. W. Worthington of Shelter Island, N. Y., June 3, 1893, I found a nest of the Rough-winged Swallow containing four much incubated eggs. The nest was placed in a bank about forty feet high, on the shore; it looked like an old Bank Swallow's burrow. It was two feet from the top of the bank and twenty-seven inches deep. The chamber the nest was in was twelve inches in diameter, and was completely filled with dried sea grasses on which the eggs were laid.

I shot the female, and as it fell in the water the male came up and tried to help its disabled mate, at the same time uttering a most plaintive cry.— HARRY B. SARGENT, *New York City.*

Cœreba versus Certhiola.—In a recent number of 'The Ibis' (April, 1893, pp. 246, 247) Mr. Sclater takes American ornithologists to task for having "recently caused needless confusion by proposing to reject the long-recognized name *Certhiola* of Sundevall [1835], and to use in its place *Cœreba* of Vieillot [1807], a term always hitherto applied to a different genus." Mr. Sclater, to make his point, claims that *Cœreba* Vieillot "was intended as a Latin equivalent for the 'Guit-Guit' of Buffon; and the 'Guit-Guit' of Buffon was primarily the South American species usually called *Cœreba cyanea*," etc. While it is true that Vieillot evidently intended to include other species in the genus *Cœreba*, the fact remains that he definitely mentioned at this time only one species, "Le Guit-guit sucrier, *Cœreba flaveola*." This then, by all rules of nomenclature touching the restriction of genera, must be the type of the genus *Cœreba*, and consequently Sundevall had no right, nearly thirty years later, to make *Cœreba flaveola* the type of a new genus *Certhiola*. It makes no difference that Vieillot later placed other species in the genus *Cœreba;* at the time *Cœreba* was established *C. flaveola* was the only species so referred, and becomes therefore necessarily the type of the genus. Whatever we may imagine to have been his "intentions," we have to be governed by what he actually did. Hence the synonymy of the genus stands as follows:

Cœreba Vieillot, Ois. Am. Sept., II, 1807, p. 70. Type and only species, *C. flaveola* = *Certhia flaveola* Linn.

Certhiola Sundevall, Œfvers. Vet.-Ak. Handl. 1835, p. 99. Type *C. flaveola*.

Mr. Sclater (Cat. Bds. Brit. Mus., XI, p. 31) gives "*C. cyanea*" as the type of Vieillot's genus *Cœreba*, as follows:

"Cœreba *Vieill., Ois. Am. Sept. ii*, p. 70 (1807). . . . Type, C. cyanea."

We have thus the incongruity of a species given as the type of genus which was not placed in that genus till some years after the genus was originally established! In fact, as I have previously stated (Auk, VIII, p. 95), it proves unsafe to take as types of genera the species explicitly stated to be such in the various volumes of the British Museum 'Catalogue of Birds,' since it sometimes turns out that some other species is in reality the type.

It may be added that it seems a little singular not to find *Cœreba flaveola* Vieill. anywhere cited in Volume XI of the 'Catalogue.'—J. A. ALLEN, *Am. Mus. Nat. Hist., New York City.*

Stray Notes from the vicinity of Muskeget Island, Massachusetts.—**Charadrius squatarola.**—Tuckernuck Island, May 10, 1893. While in my stand today, which faced a large sand flat recently exposed by the retreating tide, I perceived Black-bellied Plover picking up some large worms which they held wriggling in their bills before swallowing. Never before having seen them eat such, I secured several for identification. They are locally known as 'cod worms,' and resemble a centipede, being flat to oval, their sides being fringed with legs. In color they vary from a blood red to a dirty brown. They are from four to six and a quarter inches long. These worms first make their appearance on the flats in shoal water during the latter part of March, and they disappear early in June. Mr. Samuel Henshaw of the Boston Society of Natural History has kindly identified them as *Nereis*, the clam worm of the fisherman.

Somateria dresseri.—Muskeget and Tuckernuck Islands, March 30 and 31, 1893. Almost all the American Eiders which have been living in these waters, and which I estimate at about six hundred, departed on these dates.

Ægialitis meloda.—While walking along the shore of Muskeget Island, March 26, 1893, I saw a Piping Plover and heard it whistle. On the 29th I saw two near where I saw the first. These dates are earlier than I have before remarked.

Tachycineta bicolor.—At Muskeget Island, March 26, 1893, I saw a White-bellied Swallow apparently flying due north on migration; it was at an elevation of about sixty feet.

Circus hudsonius.—Muskeget Island, March 26, 1893, I saw a Marsh Hawk in the red plumage, apparently flying on migration northward, at an elevation of about ninety feet.

Branta bernicla.—Muskeget and Tuckernuck Islands, March 26, 1893. I estimate the number of Brant living in these waters at this date at about six hundred. Two wing-tipped birds I have in confinement eat with avidity the alga *Ulva lactuca*. They also eat *Zostera marina*, preferring the white portion farthest from the extremity of the blade. They cut this up by chewing first on one side and then on the other of their mandibles which cuts the grass as clean as if scissors had been used. The motion reminds one strongly of a dog eating, the bird turning its head much in the same way. They are fond of whole corn and common grass. These confined birds drink after almost every mouthful from a pan of fresh water. The wild birds living in this neighborhood have no opportunity of obtaining fresh water.

Asio accipitrinus.—At Muskeget Island, March 27, 1893, I saw a Short-eared Owl, which appeared to be domiciled.

Numenius hudsonicus.—Nantucket Island, July 17, 1893. The first Jack Curlew were observed today. They were at the western extremity

of the island. Two birds were seen first, and soon afterwards twenty-two more. On the 23d two birds were seen towards the western, and twenty-four towards the eastern part of the island, and I lean to the opinion that they are the same birds noted on the 17th.—GEORGE H. MACKAY, *Nantucket, Mass.*

Notes on some Connecticut Birds.—Erismatura rubida.—On June 5, 1893, three adult Ruddy Ducks were killed here and brought to me. Two were males. The eggs in the female were larger than 'buck-shot.' The flock contained five individuals. I find no previous record of the species being found in our State at such a late date. Several of these Ducks have been taken at Seaconnet, R. I., in July (Miller, Auk, VIII, 1891, 118).

Ceophlœus pileatus — Through the kindness of Mr. Gurdon Trumbull I am able to record a recent capture of this rare Woodpecker. One was shot at Granby, Conn., Nov. 1, 1890, by Mr. Lewis S. Welch of Hartford. Mr. Trumbull saw the bird soon after it was mounted.

Empidonax pusillus traillii.— A male was killed at Norfolk, in the northwestern part of the State, June 20, 1893, by Mr. W. E. Treat. It was in low alders. Others were heard.

Vireo solitarius.—Mr. Treat found a nest at Norfolk, June 23, 1893, containing four fresh eggs. It was in a small hemlock and about six feet from the ground. The female was secured.

Turdus aonalaschkæ pallasii.— Two nests of the Hermit Thrush, each containing three fresh eggs, were taken at Norfolk, June 20 and 23, 1893, by Mr. Treat. He found this Thrush common there. I think the actual nesting date in Connecticut has not previously been recorded.— JNO. H. SAGE, *Portland, Conn.*

Connecticut Notes.— On August 24, 1893, after the severe storm which swept the Atlantic coast, I visited the West Haven shore in the hopes of finding some shore birds. I had gone but a short distance when I noticed a large Hawk in pursuit of some small bird, apparently a Sandpiper. As they passed within a few yards of me I shot the Hawk, which proved to be an American Goshawk in immature plumage.

The bird which he had pursued settled in the grass near the edge of a small pool. On walking to the spot I flushed and shot the bird which was a Northern Phalarope in high summer plumage. Both birds were in excellent condition, but neither had anything in the stomach.— A. H. VERRILL, *New Haven, Conn.*

Rare Birds near Baltimore, Maryland.—I wish to record the occurrence of several rare birds in the neighborhood of Baltimore during the past few years. As far as I can learn *Geothlypis philadelphia* and *Dendroica cærulea* have not been previously observed in this locality, and in the case of the latter the range of this species in summer is also considerably extended by the capture here of an adult and young in July.

Strix pratincola.—March 14, 1893, Mr. A. Wolle, the well-known Baltimore taxidermist, shot an adult near the Old Marine Hospital, Anne Arundel County, and ten days later procured a second individual at Hawkins Point about a mile distant. While passing through the tract of woods near the Marine Hospital about July 15, Mr. Wolle found a Barn Owl's nest containing five young. The nest was situated in a hollow tree but a short distance from the spot where he had first observed the Owl shot March 14. The young varied considerably in size, the smallest being apparently about twelve days old while the largest was perhaps two weeks older. The Barn Owl is a rare bird here, and, as far as I am aware, has never been found breeding before.

Lanius borealis.—A female in the flesh was presented to me during the past winter by Mr. Wolle. It was shot by him Jan. 10, 1893, a few miles east of the city. Later in the winter two or three other Butcher-birds were observed by local collectors. Mr. Wolle informs me that on several occasions he has observed birds of this species during severe seasons.

Dendroica cærulea.—About July 7, 1893, I heard an unfamiliar bird song in the top of a large oak overhanging our country residence near Towson. Although field-glasses were brought into use, I was unable to discover the bird among the leaves. A few days later this song was noticed a second time, but I was equally unsuccessful in locating the bird uttering it. July 14 I again heard the same notes in an oak some hundred feet distance from the house. Half way up in this tree, at a height of perhaps thirty feet, three or four birds were observed moving about in a rather nervous way in search of insects. Not being able to identify them I shot one, and it proved to be an immature male Cerulean Warbler. After an interval of silence lasting but a few moments the now familiar song began again. This time the singer, an adult male of the same species, was in full view, and I quickly secured it. Returning to the same tree about ten minutes later I succeeded in taking a second immature bird. Although careful search was made I was unable to discover any more of these birds in the neighborhood.

The occurrence of an adult accompanied by young early in July suggests that the latter were reared in the neighborhood. Although a bird of the Carolinian Fauna, the Cerulean Warbler has not previously been observed in summer east of the Alleghanies, so that the capture of these birds adds considerably to the breeding range of this species.

Geothlypis philadelphia.—I shot a female May 23, 1891, in a swampy thicket about a mile east of Towson. It was in company with another bird apparently of the same species, but owing to the character of the surroundings I was unable to obtain them both. Since the capture of this bird two other Mourning Warblers have been observed in the neighborhood of Baltimore. A letter from Mr. George H. Gray to me states that he saw one singing in "a damp clump of maple saplings near Gwyn's Falls on the Franklin road," June 3, 1893. He says that there can be no doubt as to the identity of the bird, since he watched it for quite a while with a strong glass. Mr. Gray also informs me that one of these Warblers was noted by his friend Mr. P. Blogg about a year ago not far from the city.—J. HALL PLEASANTS, JR., *Baltimore, Md.*

CORRESPONDENCE.

[*Correspondents are requested to write briefly and to the point. No attention will be paid to anonymous communications.*]

The Evolution of the Colors of North American Land Birds.— A Reply to Criticism.

To the Editors of 'The Auk':—

Dear Sirs: In 'The Auk' for April Mr. Allen takes occasion to review my reeent paper, finding therein little to commend and much to condemn. Were his remarks mere statements of personal opinion I should not venture to question them, but as he has mentioned a number of passages confirming his opinions, it seems to me that they are worthy of a somewhat fuller discussion. It is generally held a just criterion of criticism to judge a writer by what he has professed to do rather than to blame him for not accomplishing what was not attempted, but this rule Mr. Allen seems to have disregarded. He does me the justice of quoting fully from the preface the intention of the paper, viz., to put forth a provisional explanation of the markings of birds suppported by a greater or less number of facts, with the hope of awakening interest and stimulating research in a new field, but in the rest of his review treats this statement of my intentions as if it had no reference to the work in hand. [1] He seems to have little respect for speculative science, and condemns the philosophizing of Poulton, Romanes, and Weismann. It appears remarkable indeed that any scientist since the time of Darwin should be too narrow to see the value of such work. For example, Mr. Allen is a firm believer in the inheritance of acquired characters, and can he for a moment deny that the intense discussion of this subject incited by the researches and speculations of Weismann has given the world a far deeper and broader insight into this most intricate of questions? [2] There can be no doubt that the speculative method is open to great abuse when recklessly pushed in advance of empirical observation, but when coupled with this it becomes all important in the advance of real knowledge. Mr. Allen would have us progress only along such lines as we can absolutely establish for all time, but this is clearly impossible. Science like all other knowledge is a process of growth in which there is a continual selection of truth and an elimination of error. Let us by all means have an abundance of material to select from. Look at almost any scientific work of fifty years ago, and unless it treat of mathematics it will be found valueless, in large measure, at the present time, although its place may have been an important one as a stepping stone to something better.

But aside from general considerations, it is of some of his detailed criticisms that I wish to speak. Mr. Allen says without any reservation that my interpretation of the change of color in the young Arizona Hooded

Oriole is erroneous. He does not state why, as he says, "it is evident that this mottled phase of plumage, occurring in a very large number of species, is a permanent one for the time being . . . ," but remarks that the assertion of a transition plumage "must be based on observation of the living bird for a sufficient period to determine the nature of the change of color." If this be so, then how can he so positively assert that the color does not change in the young Oriole? Has he observed this in the living bird? If so, he has forgotten to mention the fact, but if not, his own conclusion is of no more value than mine, according to the requirements he has himself made. However, as far back as 1835, as is noted in my paper, Yarrell recorded experiments of the sort demanded by Mr. Allen, to prove that in certain species there is a change in color without moult, viz., by marking feathers on living birds and observing the change. Mr. Witmer Stone writes me on this subject as follows: "I have been paying especial attention to young birds in first plumage during the past year, and while I cannot agree with Yarrell's idea of the plumage changing without moult as a general rule, I think that in some instances it is correct. In *Icterus spurius*, for instance, I cannot detect any moult from the first plumage to the fall dress of the 'bird of the year,' but there seems to be a darkening or intensification of the pigment." Dr. C. Hart Merriam and Dr. L. Stejneger have both asserted that in certain species a pigment change without moult occurs, and even if the old experiment of Yarrell, when applied to Orioles, should prove my deduction to be incorrect, it would not invalidate the assertion that in certain exceptional instances there is a change of color without moult. [3]

Concerning the mode of pigmentation of a feather, I would say that although in the text of my paper I have neglected to allude to the embryonic development of a feather, I am of course aware that the pigment is deposited during the process of formation of the feather. I am acquainted with what Burmeister, Owen, Wiedersheim, and others say about feather growth, but find nothing in their accounts to invalidate the position taken in my paper—viz., that the pigment is deposited along the lines of greatest and least resistance. Burmeister does not even allude to detecting pigment cells until the feather has attained a tolerably advanced stage of development. He says: "But, if the feather be colored, an accumulation of pigment is formed on each of the oblique striæ above each of its individual cells, and this is larger the nearer the cell is to the main stem of the barb."[1] This remark with others of a like nature would rather strengthen than detract from my contention that pigment deposition is in accordance with Prof. Cope's law of growth force.

The remarks upon hybrid feathers which Mr. Allen calls "the various classifications and generalizations based on this erroneous departure," are quite independent of the theory intended to account for them. It is merely an attempt to classify certain facts, which, so far as I can discover, have been previously ignored,—viz., the plan of coloration of individual feathers

[1] Nitzsch's Pterylography, p. 8.

which in masses produce a definite color pattern. Mr. Allen's little exclamation about "the fewer facts for a nicely spun theory the better" is consequently not inserted in a suitable place, since I am not dealing with theories in this particular instance.

While Mr. Allen's objection that the pigment is deposited before the feather leaves the sheath does not interfere with my view of deposition along lines of greatest and least resistance, it may very seriously interfere with his own theory of climatic influences on color (which I have also accepted in my paper). Mr. Wallace writes me as follows on this subject: "There is a point you do not refer to which seems to me most important—that is, whether the colours and markings of the feathers are developed in the young feather before it has opened out of its sheath, as we know that all the markings of the wings of butterflies are to be seen before it emerges from the pupa. If it is so, then *climate can hardly have any direct influence.*"[1] It is quite apparent that if Mr. Allen is not prepared to admit that some pigment is either deposited on or withdrawn from the fully formed feather, then climate can produce no effect on pigmental colors. It would thus seem as if he should at least be willing to share the humiliating mistake with which he charges me. [4]

In a foot-note he also alludes to a supposed new feather structure noted by me in 'Zoe,' and refers me to Coues's 'Key to North American Birds' for a description (p. 86). Following is the description there given: "*Filoplumes*, *filoplumæ*, or thread-feathers, have an extremely slender, almost invisible stem, not well distinguished into barrel and shaft, and usually no vane, *unless a terminal tuft of barbs may be held for such.*" Upon referring to Nitzsch I found only two forms of filoplumes figured, both with the terminal tuft of barbs, and I consequently supposed the structure which I briefly and tentatively recorded as having no barbs whatever, was different. Upon further examination of the text of Nitzsch I find he has included this form also under the head of filopluma, without, however, figuring it in the plate.

Mr. Allen is also quite right in saying that I have been handicapped in my work by insufficient knowledge of exotic birds, my opportunities for studying these having been very limited upon the Pacific Coast where no satisfactory collections are available. In speaking of patterns of marking with which I am unfamiliar, I had no intention of asserting that such did not exist, but simply that they were quite unusual if they did occur among North American species, whereas other forms are very often repeated. Exceptions (even a considerable number of them in fact) would not invalidate the conclusions so long as a fair ratio was maintained between the unusual forms and the most common styles.

Mr. Allen must have taken especial pains to discover a contradiction where none exists in referring to the Brown Creeper, in order to bring in his phrase of "slipshod generalization." [5] It would seem as if in a paper

[1] Italics mine.

where so many generalizations are made he could have been more judicious in selecting an example to fit the term. In speaking of color determining habit I referred only to the general shade of color—brown genera would be forced by natural selection to the ground and olive-green birds to the trees; but in speaking of the Brown Creeper I refer to its detailed markings and streaks, in which we have not a perfect illustration, but "the nearest approach" to an instance of special protective resemblance.

In speaking of the Passenger Pigeon Mr. Allen takes the trouble to italicize the assertion that the tail markings to which I allude as recognition marks "are found only at the extreme base of the tail, within the area normally concealed by the coverts, *and are therefore not visible under any ordinary conditions.*" If he will take the trouble, instead of merely looking at a skin with closed tail, to *spread the tail feathers*, as a bird does at every turn in its evolutions, he will find a conspicuous broad band of dark brown strongly relieved against the white of the under tail-coverts and contrasted also with the conspicuous white outer tail-feathers. Although I have seen the Passenger Pigeon alive I do not now remember how distinctly the tail markings showed, but I have in no instance in the text of my paper implied that the conclusions were based upon the study of live birds, except in certain instances where this was stated. [6] Slips in nomenclature are never pardonable in a work of this sort, but by way of explanation I may state that I was suffering from an attack of nervous prostration during the publication of the latter part of the work, and was physically unable to give it the care which it demanded.

Mr. Allen fails to see any use in the plate showing the evolution of the pattern of head markings, since, as I have said in the text, the relationships "are not supposed to be genetic." The plate is intended to show that among living North American birds various types of head markings exist which are related more or less nearly to one or all of the five types with simple longitudinal streaks. There is no way in which we can now learn the colors of extinct birds, and it is consequently entirely out of the question to think of presenting a genetic series of head markings to show their evolutionary sequence. The most that can be done is to show that living birds happen to represent different stages in an ideal sequence from a streaked plumage, and this taken in connection with the fact that the streaked feather is the elementary type of feather marking, [7] and with the *a priori* considerations as to why it should be so, serves to confirm, without necessarily proving, the supposition that the head markings have all been evolved from longitudinal streaks.

The fact that in comparing low groups of birds like the Pigeons and Tinamous with such high groups as the Thrushes and Sparrows the latter are found to have a streaked plumage where the former have not, is in no wise contradictory to the assertion that the streaked plumage is the primitive type. Surely no one ever made the absurd assertion that color development advanced from the lowest to the highest groups of birds *pari passu* with structural development. How then could we explain the high development of markings in Auklets and Ducks, and the brilliant plumage

of Pigeons? Many large groups have become highly specialized on a low type of organization, and show a far more complicated color development than the highest families in the scale.

In a review as long as that of Mr. Allen, it would have seemed reasonable to expect that he would have found room for at least a bare mention of the most important suggestions in the paper in qnestion. Although he alludes to the "large amount of nonsense" in the discussion of recognition markings in which I have simply elaborated some of the views of Wallace and Poulton, following directly in their footsteps, he does not even mention the law of the assortment of pigments, which Prof. Cope considers the most important original contribution of the paper, [8] nor to numerous other matters of greatly more importance than the tail markings of the Passenger Pigeon. I am well aware that the paper is open to an unlimited amount of criticism, but as I asserted in the preface it was not written with any idea of being final or conclusive, but simply to stimulate thought in a new line and to awaken more competent investigators to a new field of research. If it accomplish this I am quite willing to see it overwhelmed with criticism and die, but I appeal to the ornithologists of America not to let it die without bearing some little fruit. Whatever the critics may say I am convinced that amongst the mass of rubbish, if such it be, there are some few suggestions that will be of value in the elucidation of the problems of color evolution, and I most ardently hope that they will be sought out and developed into something better and more worthy of lasting.

CHARLES A. KEELER.

Berkeley, Cala., Sept. 11, 1893.

[Having given Mr. Keeler so much space, my reply must be as brief as possible, and might be much shorter than it is had Mr. Keeler been a little more exact in his statements as to what I really said in my review of his work. To save space I have inserted numbers enclosed in brackets after the points which seem most to require notice, and reply to them in the correspondingly numbered paragraphs which follow.

1. In fact, Mr. Keeler himself seems to have forgotten this modest and tentative attitude throughout the greater part of his work.

2. What I really said on this point needs no qualification, namely, that "much of the speculative writings of Poulton, Romanes, Weismann, and many other writers who have of late been so prolific of explanations of the abstruse things in nature" is natural history romancing posing as science. This is not a general condemnation of the scientific work of these writers, for it is far from my desire to deny to either of them, and particularly to Weismann, the credit of contributing, through genuine research, to the real progress of science. Neither did I so thoroughly condemn Mr. Keeler's own work as his opening sentences above imply; "on the contrary," to quote from my review, "we find much to commend in Mr. Keeler" (p. 190); and again: "In the two hundred and odd pages

devoted to the 'Colors of North American Birds' there is much that is suggestive and worthy of commendation, mixed with a great deal that is weak and unphilosophical," etc. (p. 191). Or again: "While there is much that is valuable in the work, and many points that are well taken, Part II especially is largely vitiated by unsound reasoning, by misapprehension of facts, or by lack of general information on special points" (p. 194). The trouble is that Mr. Keeler seems unable to distinguish between pure speculation and reasonable hypothesis.

3. It is not claimed that there is never any change in the color of feathers without a moult, aside from the fading and very pronounced change we know to take place simply by exposure of the plumage to the elements. The case of the Oriole simply typifies a large class of cases where there is a transitional, immature dress characteristic for a season or two, according to the species, of the young male in a great many kinds of birds. The evidence, not altogether negative, that this is what it seems, and is generally believed to be, namely, a true transition stage, where often it is difficult to find two birds marked exactly alike, is so overwhelming and conclusive that the *onus probandi* fairly rests on the supporters of the opposing theory that the birds are gradually acquiring the perfect or adult plumage by a radical, gradual change of color in the mature feather *without* moult. To recite the evidence against this kind of change would require far more space than can here be spared.[1] In this connection, however, it may be noted that a microscopical examination of the mature feathers of Orioles, which Mr. Keeler assumes gradually change from olive to black, will probably show that pigment has very little to do with the case. Should such prove to be the fact the question could be readily settled; for it seems too much to suppose that there can be sufficient structural or molecular change in the mature feather to produce a radical change of color.

4. This is a postulate I am surprised to see emanate from Mr. Wallace, or even Mr. Keeler! It is true that we know little of the *method* of physiological action resulting from climatic influences, but the *results* of this potent force, encountered on every hand, are too evident to be overlooked. That humidity, or its absence, acts directly on the fully formed feather so as to cause the "*deposit*," or "*withdrawal*," of pigment is a conception too absurd for serious consideration, beyond the obvious fact that feathers do fade through exposure, in the living bird as well as in the museum specimen, somewhat in ratio to the degree of aridity and the intensity of the bleaching sunlight to which they are exposed. But the gradual evolution of a permanent change of color, such as marks geographical races or representative species for example, must obviously be due to the long-continued action of the environing conditions upon the

[1] See some remarks on this point, however, in Bull. Am. Mus. Nat. Hist., Vol. V, p. 108.

whole organism, and thus involving, among other changes, the amount and character of the pigment *at the time of its deposition during the formative stage of the feather.*

5. Any fair-minded reader who will take the trouble to see how the phrase "slipshod generalization" is introduced will see that it has no necessary bearing on the case of the Brown Creeper, but relates directly to his assumption that "the habits of birds have been more or less determined by their colors," and to his explanation of how they have been so determined. In case there is any connection between color and habits, it is habit that has determined color, according to the views of most evolutionists, rather than color that has determined habit, which seems to be purely a discovery of Mr. Keeler's.

6. When Mr. Keeler has observed the living bird and found that when the Pigeon spreads its tail it spreads only the rectrices and not the lower coverts as well, it will be time to consider the point made in his rejoinder as well taken.

7. It is perhaps worth while to state that "the *fact* that the streaked feather is the elementary type of feather marking" is not accepted as a "fact" to the extent Mr. Keeler's positive statement might lead one to suppose. Indeed, the opinion of several eminent investigators who have recently expressed themselves on the subject is quite the reverse, both Kerschner and Gadow, for example, believing that the distribution of coloring matter in *transverse bars and lines* is phylogenetically the older method.

8. Professor Cope, in reviewing Mr. Keeler's work in the 'American Naturalist' (June, 1893, p. 459) has said: "The most important contribution towards the discovery of the origin of colors in birds by Mr. Keeler is his *demonstration*[1] of the law of the Assortment of Pigments. His classification of our birds in accordance with their color relations, is a valuable preliminary to further research." But it is impossible for me to believe that Professor Cope spoke from a due consideration of the subject or from any intimate knowledge of the facts involved. His careless mention of the matter is evident from his reference to Mr. Keeler's "demonstration" of his law, when Mr. Keeler tentatively puts it forth with the usual 'ifs' and other qualifications, and says distinctly that the "theory could not be demonstrated without further study of the chemical properties of pigment"; and further adds: "Until such experiments have been made, however, it is necessary to depend upon appearances, and here there are many facts that seem to support the view." This, then, is Professor Cope's "demonstration" of "the law of the assortment of pigments," which seems to give Mr. Keeler so much consolation.

It is needless to say that I look upon this theory as no better than numerous others I took the trouble to criticise, and almost regret that I am now called upon to expose its worthlessness. It is based on pure

[1]Italics mine.

guess-work, with no basis in experiment, microscopical study, chemical analysis, or properly observed facts of any sort, as shown by Mr. Keeler's own statements. He is speaking, or supposes he is speaking, of pigment, but his remarks show that he refers to color in a broad sense. Yet no blue pigment has ever been discovered, and green and yellow are well-known to be not by any means always due to pigment, but are merely 'objective structural colors.' Thus, according to Gadow, violet and blue always belong to this category, green almost always, and yellow occasionally. And among the instances he cites where "yellow feathers are in reality without pigment" are such birds as *Icterus* (*!*), *Xanthomelas*, *Picus*, etc. Green, except in the Musophagidæ, "is always due to yellow, orange, or grayish brown pigment with a special superstructure, which consists either of narrow longitudinal ridges, . . . or else . . . the surface of the rami and radii is smooth and quite transparent, while between it and the pigment exists a layer of small polygonal bodies, similar to those of blue feathers." Further space cannot be given to the subject in this connection, but the reader is advised to carefully study, in connection with Mr. Keeler's "theory of the assortment of pigments," and related parts of his work, the article on 'Colour' by Dr. Hans Gadow in Professor Newton's recently published 'Dictionary of Birds,' from which some of the above statements are quoted.

It is evident that if Mr. Keeler had possessed what may be termed even a fair superficial knowledge of the investigations that have been made respecting pigments, and the structure of feathers in relation to color, he could not have propounded so utterly defenceless a hypothesis as his "Law of the Assortment of Pigments," and would have omitted a great deal of the "rubbish" that he has put into his book on the general subject of the "evolution of colors" in birds.

Many of the minor points in Mr. Keeler's rejoinder are passed over as hardly demanding space for formal consideration, even though the real bearing of my criticisms is in several instances greatly misrepresented.

In conclusion I may add that the task of reviewing Mr. Keeler's book was a painful one, and was prompted only by a sense of duty, not only to the many inexperienced readers who might be misled by it, but as a needed protest against a very prevalent kind of pseudo-science that has of late gained great currency and popularity. That some such antidote was not wholly unnecessary is shown by the fact that the editor of a prominent scientific journal is found to have endorsed one of its most groundless hypotheses.—J. A. Allen.]

Birds of British Columbia and Washington.

To the Editors of the Auk:—

Dear Sirs:—Over the initials "C. F. B." there appeared in the last number of 'The Auk' a review of my final paper on the Birds of British Columbia and Washington.

Had the paper merited one half the space given it by its distinguished critic, or had that gentleman a much smaller influence than he is supposed to have as an authority on American ornithology, I should refrain from any rejoinder to his unhappy criticisms. Mayhap a few readers of 'The Auk' have taken some pains to verify the rather startling disclosures of C. F. B., and, like myself, have been somewhat amazed at the strange mixture of truth and fiction which he has heaped upon the article. But the majority have no time for such analysis; they read the review, translate the initials, and that settles it. For the just opinions of many such readers of our quarterly journal I have much regard, and, ere they pass final judgment on it, I would plead somewhat to the indictment.

The "principal fault" of the paper is stated to be "a certain lack of care and thoroughness in its preparation."

Six months of fairly diligent labor was spent almost exclusively in preparing the paper after my return to Philadelphia from the West. A preliminary report containing nearly all of the objectionable features designated by C. F. B., was published in 'The Auk.' All determinations of importance were based on comparisons with ample material from the principal museums and were in many cases confirmed by well-known active members of the A. O. U.

My knowledge of the bibliography of Washington and British Columbia birds is said to be "meagre," because of the "long array of species which he proceeds to add to the list of birds known to occur in each of these districts."

In support of this assertion my reviewer names twenty-six such species from one or the other of the two lists on pages 22 and 23 of my paper. On page 22, referring to the main list in question, viz., that of additions to previous faunal lists of Washington, I say, "to the combined lists of Cooper, Suckley and Lawrence twenty-five species of Washington birds are added. *These, with those not included in Mr. Lawrence's Grays Harbor lists are:*"—then follows the list. Anyone taking the trouble to look over the names excepted to by C. F. B., "in one or the other list" will see that he has quite ignored my foot-note on page 23, which states that species in the list previously recorded by Cooper and Suckley are designated by an asterisk.

Two thirds of the birds taken exception to have this mark. My critic has utterly failed to see that the list is simply one of species seen by me and not recorded by Lawrence, and in so doing he has grossly misrepresented me. Among other species in my Washington list, he gives as "heretofore recorded," *Aythya americana*, *Colymbus holbœllii*, *Larus brachyrhynchus*, *Totanus flavipes*, *Falco columbarius suckleyi* and *Cypseloides niger*! None of these being recorded in Cooper, Suckley and Lawrence it makes no difference, so far as the intent of said list is concerned, whether these have been heretofore recorded or not. Apart from this, however, I would ask C. F. B. to verify his own statement in regard to these six birds by telling the readers of 'The Auk' just where

and by whom they were "previously recorded" for the State of Washington. To one so "fortunate" in his "bibliographical researches" surely this should be an easy matter!

It is almost a pleasure to state, however, that I have, by omitting to place asterisks after *Circus hudsonius*, *Asio wilsonianus*, *Chætura vauxii*, *Pica pica hudsonica*, and *Parus atricapillus occidentalis*, given my critic some cause of complaint. These omissions are not only lamentable errors but they illustrate in no small degree that "carelessness" which C. F. B. has in such eminent degree both denounced and practised on this occasion.

By way of climax to the sermon on "activity," "faunal peculiarities," and zoögeography,— we read the following: "but they [readers of 'The Auk'] may wonder at the carelessness which enables the author to swell his British Columbia list *with species mentioned by Chapman and Fannin*[1] (whose recent paper he does refer to), and even to 'add' to the Washington record two birds whose type specimens undoubtedly came from that State."

The two birds referred to are *Chætura vauxi* and *Dryobates pubescens gairdneri*.

My previous remarks on the Washington list cover both these cases, the Woodpecker being starred and, in the original copy, the Swift also, but in revising the proof the printer dropped the star and the omission was overlooked in final proof-reading. Whether the types of these species came from Washington is far from the "undoubted" fact which C. F. B. would have us believe. No careful critic presumes to set hard and fast lines to the type localities of J. K. Townsend's Columbia River novelties.

Coming now to the main part of his accusation, C. F. B. has charged me with adding as new to British Columbia, species already recorded by Fannin and Chapman.

Notwithstanding the gravity of that charge he does not designate which they are, leaving it to be inferred there are several. In his list of errors I have found two names coming under this category. One of these is *Bubo virginianus subarcticus* and, as is inferred, it may be found in the lists of both Chapman and Fannin. This was a pure and simple *lapsus pennæ* on my part and should have read *B. virginianus arcticus*. The annotated list would show any one, careful enough to inquire, that this was, as I have said, only a slip of the pen. It was due to carelessness, no doubt, but not the wilful carelessness implied by the terms of its condemnation. The other bird is *Glaucidium gnoma*. Chapman's list recorded only *G. gnoma californicum*. In Mr. Fannin's list all the Pygmy Owls of British Columbia are classed under one name, *Glaucidium gnoma*. Mr. Fannin's list was chiefly based on western Cascade specimens, and as he fails to distinguish between the type and its subspecies, and very little of his collecting was done in the restricted "interior" habitat of true *gnoma*, it is evident that *californicum* was the form to which he had chief reference.

[1] Italics mine.

I was permitted to examine all of Mr. Fannin's specimens in the Victoria Museum but found no *gnoma* skins among the *californicum*. If Mr. Fannin had intended in any way to record *gnoma* instead of *californicum*, or to lump the two under one name, he failed to say anything about it in a letter of exceptions to my paper written me on receipt of a copy. On these accounts I thought, and still maintain, that it was just to consider Fannin's reference to the Pygmy Owl as referring authoritatively to no one form but presumably to *californicum* for the most part, and that I, having an authentic specimen of *gnoma* from the interior, was justified in recording it as a bird new to the recorded fauna of British Columbia. Mr. Fannin, having taken no exception to this ruling, I trust C. F. B. will accept it also, and absolve me in both instances.

As to the value of my determinations on the status of certain species and races in the A. O. U. Check-list, this is not the time nor the place for either professional or amateur to venture judgment. Between much that we strive to decide in this line there is but the toss of a penny so far as the worth of individual opinion goes. The fiat of a Committee on Nomenclature is, logically and scientifically, not a whit better, perhaps, but for the sake of peace and harmony we are glad to have it.

SAMUEL N. RHOADS.

Philadelphia, Aug. 8, 1893.

[The foot-note which Mr. Rhoads assumes that I ignored was by no means overlooked. This foot-note related to a double-columned list of birds headed by the words: "To the combined lists of Cooper, Suckley and Lawrence twenty-five species of Washington birds are added. These with those not included in Mr. Lawrence's Gray's Harbor lists are:" [here followed the list]. It seemed too unlikely that Mr. Rhoads could think it worth while to institute such a formal comparison between his list and that of any single one of the various previous writers on Washington birds, and there appeared no reason why Mr. Lawrence's lists should be selected and the rest ignored. Did he mean it to be understood that the species referred to were new for Washington (ruling out the Cooper-Suckley records, much as he had done those of J. K. Lord)? It certainly appeared so, and such was assumed to be the case. What Mr. Rhoads's real intentions were, I am now even more in doubt. For in this letter he says "the list is simply one of species seen by me and not recorded by Lawrence," yet only a few lines above he has said it is a list "of additions to previous faunal lists of Washington," thus, himself, definitely confirming my conclusion which he says "grossly misrepresents" him. Taking this latter sentence in connection with the statement on the opening page of the paper itself: "Since the Cooper-Suckley Pacific Railroad Reports nothing of much value relating to Washington birds has been published except the local lists of Mr. R. N. [*sic*] Lawrence," the inference is unavoidable that at that time he really did not know of any other writers on the subject.

The principal criticism whose justice Mr. Rhoads denies, was upon his lack of care and thoroughness. Many further evidences of this might be shown, were it not too well illustrated by his own admissions in the 8th, 11th, and 13th paragraphs of the present letter, and by the fact that not even now, in writing it, did he take the trouble to extend his 'bibliographical researches' to such publications, for instance, as the Bulletin of the Nuttall Club and the Bulletin of the American Museum. They would have supplied him with records of several of the birds which he selects to confound his reviewer. The following are records for all the species he names:—

Aythya americana — *Hubbard*, Zoe, III, 142.

Colymbus holbœllii — *Chapman*, Bull. Am. Mus. N. H., III, 129, 155.

Larus brachyrhynchus — *Chapman*, Bull. Am. Mus. N. H., III, 130, 155.

Totanus flavipes — *Townsend*, 'Narrative,' 335.

Falco columbarius suckleyi — *Brewster*, Bull. N. O. C., VII, 227.

Cypseloides niger — *Hubbard*, Zoe, III, 143.

What he says about the lack of an exact type locality for *Chætura vauxii* and for *Dryobates pubescens gairdnerii*, has nothing to do with the case. *Chætura vauxii*, Townsend explicitly states, came from the Columbia River, and Audubon (for it was he who described the Woodpecker—not Townsend as Mr. Rhoads has it) gives the same source for his type.

More might have been said concerning his discussion of certain subspecies, but it is hardly worth while. If Mr. Rhoads really does not care "the toss of a penny" for "the fiat of a Committee on Nomenclature" as to the value of his "determinations on the status" of such forms as *Melospiza lincolni striata* and *Sylvania pusilla pileolata*, it is perhaps fortunate for his peace of mind.— C. F. Batchelder.]

NOTES AND NEWS.

Mr. Austin F. Park, an Associate Member of the American Ornithologists' Union, died at his home in Troy, New York, September 22, 1893, aged 68 years. Mr. Park was born in Canaan, Columbia County, N. Y., May 11, 1825, and after a preparatory education entered the Rensselaer Polytechnic Institute, in Troy, from which he was graduated in 1841 with the degree of Civil Engineer. He remained, however, for some time longer at the Institute, as a student of chemistry, geology, botany and natural history. Later he was engaged in engineering and surveying, and afterwards as a mathematical and philosophical instrument maker, and was

a successful inventor. Later in life he became a solicitor of patents, which profession he followed until the illness which caused his death. Throughout his life he was an earnest student of natural history, and was especially interested in ornithology. He was one of the founders of the Troy Scientific Association, before which he gave many addresses on scientific subjects. His collection of birds is one of the finest private collections in the State, it including most of the species found in eastern North America. He was especially interested in the study of the brains of birds, of which he prepared many dissections, and accumulated an extensive series of observations on the relative weight of the brain, and of its different parts, in various species. It is to be regretted that he neglected to publish the results of these investigations in some scientific journal, as was his intention. His ornithological publications are mainly limited to scattered notes in various ornithological or other natural history journals, and articles in the Troy 'Times' newspaper.

He is spoken of by those who best knew him as a kindly, genial man, who possessed the affection of a wide circle of friends.

Mr. Benjamin F. Goss, an Associate Member of the A. O. U., died at his home in Pewaukee, Wisconsin, July 6, 1893, aged 70 years. Although Capt. Goss published very little, he is well known to a wide circle of ornithologists as an enthusiastic and careful collector, especially of birds' nests and eggs, and through his extensive correspondence with publishing ornithologists many of his valuable observations have long since found their way into the literature of ornithology. He was a valued correspondent of the late Dr. Brewer, and frequent contributions from his pen are acknowledged by Captain Bendire in his 'Life Histories of North American Birds,' and by his brother, the late Colonel N. S. Goss, in his 'Birds of Kansas.' The brothers Goss were devotedly attached to each other and shared many expeditions in company in pursuit of ornithological treasures. As recorded by Col. Goss in inscribing to his brother his 'History of the Birds of Kansas,' Mr. B. F. Goss's collection of North American eggs and nests is well known as one of the most important private collections in the West, which of late has been on exhibition in the Milwaukee Public Museum.

Mr. Charles F. Adams, of Champaign, Ill., a zoölogical collector of wide experience and a superior taxidermist, one of the Associate Members of the American Ornithologists' Union, died suddenly in Chicago, May 20, 1893, of congestion of the brain. He was engaged at the time on the installation of the ornithological exhibit of the Illinois State Laboratory of Natural History in the Illinois State building at the Columbian Exposition,—an exhibit to whose preparation he had devoted eighteen months of continuous labor.

Mr. Adams was born Aug. 23, 1857, near Champaign, Illinois, and received his early education in a country school. In 1876 he entered the University of Illinois, devoting much time to taxidermy. While an undergraduate he made a successful collecting trip to Florida in the interest of

the University museum. Continuing his studies as he found time, he graduated from the School of Natural History in 1883. Two years were then spent by him in the service of Ward's Museum, after which he was occupied for a short time in Washington, and did some excellent work for the Smithsonian Institution. He next went to Auckland, New Zealand, where he served for three years as taxidermist to the curator of the city museum. At the expiration of this engagement he made a tour for study and collection in Northeast Borneo, where he accumulated valuable material, chiefly birds and mammals, and did considerable work for the Auckland Museum. His unassuming narratives of the experiences of this trip possessed a peculiar and absorbing charm, and were a rare treat to those privileged to listen to them. Returning to America by way of London, he occupied his time in the service of the University of Illinois, and in mounting and disposing of his Bornean and New Zealand collections. The greater part of these went to the above University, to the Smithsonian Institution and the National Museum, and to the Museum of the city of Milwaukee, but a considerable part of these most excellent collections remained in his possession at the time of his death. In 1890 he made a joint expedition with Dr. Baur, of Clark University, to the Galapagos Islands, where he spent six months in energetic collecting, securing material of exceptional value. Upon his return he immediately undertook the preparation of the exhibit on which he was at work at the time of his death.

Mr. Adams's principal contributions to the literature of ornithology are contained in a paper on the birds of Northeast Borneo, based on his collections, and published by Mr. D. G. Elliot.

Not only was he a close and devoted student of nature, and a successful collector, but also a man of sterling qualities; and his frank, genial, and modest disposition won enduring friendships for him wherever he went.

THE ELEVENTH CONGRESS of the American Ornithologists' Union will be held in Cambridge, Mass., beginning Monday, November 20, 1893, and continuing the following days. The meetings will be held in the Nash lecture-room in the University Museum, Oxford St.

In accordance with a vote to that effect at the last Congress, an evening session will be held on Monday evening, for the election of officers and members and the transaction of routine business, so that Tuesday, usually employed for this purpose, may be wholly given up to the reading and discussion of scientific papers. Members intending to present papers are requested to send the titles of the same to the Secretary, Mr. John H. Sage, Portland, Conn., at least not later than November 15, in order to facilitate the preparation of a program of papers to be read before the Congress.

Members who wish lodgings secured for them in Cambridge during the Congress are requested to send their names, before November 1 if possible, to Mr. Montague Chamberlain, Harvard University, Cambridge.

IT HAS recently been announced that "a Congress on Birds will be held in Chicago during the month of October under the auspices of the World's

Congress Auxiliary." It is the design of the committee having the matter in hand "to have the Congress treat of birds from the standpoints of the scientist, the economist and the humanitarian." It is "the wish of the committee to enlist the co-operation of scientists in the proposed Congress, in order that the study and culture of birds may become more general and may be appreciated at its true worth by the people. The true scientist only can prove the value and interest that lie in the department of ornithology, and in its appreciation does the importance of the two other divisions depend. The audiences of the Congress," says the circular of the committee, "will doubtless be largely composed of those who, through æsthetic and humane sympathy rather than intellectual appreciation, have been attracted to the subject, and they will prove a fertile soil for the popularizing of the science."

While technical papers would obviously be out of place, there is room for a wide range of semi-popular communications adapted to interest and educate the mixed audiences that will attend the Congress. The committee solicits especially those of a practical character, bearing upon the rearing and taming of song birds, methods of promoting the increase of beneficial species, and especially of checking the indiscriminate slaughter of useful and beautiful varieties, including the subject of legislation for their preservation.

The time designated for the Congress is the week beginning October 16. It is hoped that ornithologists will render any aid in their power to make the occasion a success. There is a general Committee of six, with Dr. Elliott Coues as Chairman and Prof. S. A. Forbes as Vice-chairman, and a Woman's Committee of six, with E. Irene Rood as Chairman. The Advisory Council has not yet been announced.

We have recently received Volume I of Mr. Henry Nehrling's English edition of his great work on North American birds. It forms a quarto of over 400 pages, with 18 colored plates, and in point of typography is an elegant example of book-making. As is known to many readers of 'The Auk,' the work has for some time been appearing in Parts (see Auk, VII, p. 78, etc.), and now that the first half has been gathered into book form the author improves the occasion to make known more definitely than heretofore, apparently, the exact scope of his enterprise. It appears also that a change has been decided upon in the title, which is now 'Our Native Birds of Song and Beauty.' The author further says in his preface: "The title does not give the reader a full idea of the scope and contents of the work. It treats of all our native birds from the Thrushes to the Parrots, including all our Songbirds, Flycatchers, Hummingbirds, Swifts, Goatsuckers, Woodpeckers, Kingfishers, Trogons, and Cuckoos, from the Atlantic to the Pacific, and from Alaska and Labrador to Florida and Mexico." The work "is intended to fill the gap between the very expensive and the merely technical ornithological books," and "to combine accuracy and reliability of biography with a minimum of technical description." There is evidently a field for such a work, which Mr. Nehrling's book seems well adapted to fill.

THE following Post Office news item will doubtless be of interest to many readers of 'The Auk.' "A proposition submitted by the Postmaster General to the International Postal Bureau to admit specimens of natural history to the international mails at the postage rate and conditions applying to 'samples of merchandise' has been rejected by a vote of the countries composing the Universal Postal Union, and consequently all such specimens (except those addressed to Canada or Mexico) must be fully prepaid at letter rates; and *dried animals and insects* cannot be sent under any conditions, being absolutely excluded by the provisions of the Universal Postal Union Convention, regardless of the amount of postage prepaid thereon. This will prevent the exchange of such specimens between collectors, natural history museums, etc., by international mails, and no package *known* to contain them can be accepted at a post office for mailing to foreign countries. Natural history specimens (other than dried animals and insects) may be sent to Canada as 'merchandise' at one cent an ounce. They may also be sent by parcel post to Mexico and to all other countries with which the United States has parcels post conventions."

THE HON. WALTER ROTHSCHILD has issued a prospectus of a new journal of natural history in connection with his museum at Tring, England, to be entitled 'Novitates Zoologicæ.' It will be imperial octavo in size, and form an annual volume of about 400 to 600 pages, with ten to fifteen plates. It will contain articles on insects, birds, mammals, reptiles and fishes, and also on general zoölogy and palæontology. The parts will appear at irregular intervals, beginning with January, 1894. Subscriptions (21 shillings yearly) may be addressed to Ernst Hartert, Zoölogical Museum, Tring, Herts, England.

The collections forming Mr. Rothschild's museum were begun in 1875, and the building containing the collections was started in 1888 and first opened to the public Sept. 1, 1892. In November of the same year the well-known ornithologist, Mr. Ernst Hartert, was given the general curatorship. The museum contains two distinct departments, the 'Public Galleries' and the 'Student's Department.' The former contains large collections of mounted specimens in all departments of zoölogy; the latter is "entirely devoted to ornithology, coleoptera and lepidoptera." The birds already number about 40,000 skins, representing over 7000 species.

R. H. PORTER, the London publisher, has issued a prospectus of a work entitled 'The Avifauna of Laysan and the neighboring islands; with a complete history of the Birds of the Hawaiian Possessions,' by the Hon. Walter Rothschild. It will be illustrated with 46 colored and 8 black plates by Messrs. Keulemans and Frohawk, and 18 collotype photographs, the latter "showing various phases of bird-life and landscape." The edition will be limited to 250 copies, and no separate parts will be sold. The book will be published in three parts, imperial quarto, at £3 3 s. per part.

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ERRATA.

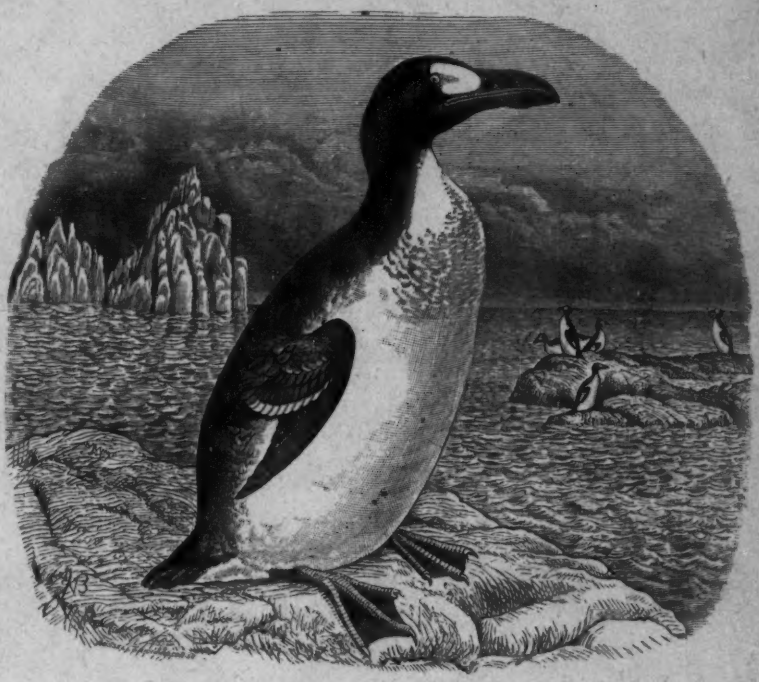
Page 17, line 8, for 'hudsonicus' read 'hudsonius.'
" 125, " 37, " 'cincinnatus' " 'cincinatus.'
" 126, " 39, " 'hudsonius' " 'hudsonica.'
" 135, " 32, " 'Myiadestes' " 'Myadestes.'
" 220, " 19, " 'manduyti' " 'mauduyti.'
" 242, " 12, " 'ostralegus' " 'palliatus.'
" 243, " 24, " 'fuscus' " 'phœbe.'
" 274, " 44, " 'Jer. Falcon' " 'Jer Falcon.'
" 287, last word " 'raising' " 'raisin.'

Old Series, Vol. XVIII } CONTINUATION OF THE BULLETIN OF THE NUTTALL ORNITHOLOGICAL CLUB { New Series, Vol. X

The Auk

A Quarterly Journal of Ornithology

Vol. X —OCTOBER, 1893— No. 4



PUBLISHED FOR

The American Ornithologists' Union

NEW YORK

L. S. FOSTER

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'THE AUK,' published as the Organ of the AMERICAN ORNITHOLOGISTS' UNION, is edited by Dr. J. A. ALLEN, with the assistance of Mr. C. F. BATCHELDER.

TERMS:—$3.00 a year, including postage, strictly in advance. Single numbers, 75 cents. Free to Honorary Members, and to Active and Associate Members of the A.O.U. not in arrears for dues.

Subscriptions and **Advertisements** should be addressed to the publisher, L. S. FOSTER, 35 PINE STREET, NEW YORK, N. Y. **Foreign Subscribers** may obtain 'THE AUK' through GURNEY AND JACKSON, 1 PATERNOSTER ROW, LONDON.

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